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ANDERSON, J. D.
JOURNAL
1954-1959
CALIFORNIA

AMBYSTOMA M. CROCEUM
STUDY

D. Anderson
1954

Ambystoma macrodactylum croceum

Dec 2. Rio del Mar, Aptos, Santa Cruz Co., Calif. 9:20 P.M.

one male collected in center of dirt road. It was facing east towards a temporary pond. A second animal collected about 25 yards S. of first again on the dirt road but it faced away from pond. 9:35 a third was collected on the road. At this time it

Air Temp. 55°F - 1" above ground

Surface Temp. 56°F - in leaf litter.

was not raining - had rained for about 3 hours or more previously. 4th taken OOR on Bonita Rd only 10 yds from 3rd animal. Had been dead perhaps 3 hours (♀).

At 10:00 pm another was collected on the road facing north. Air temp 56°F 1" above ground; soil temp. 52°F $\frac{1}{2}$ " below surface. 10:15 - 6th taken facing away from pond i.e. west. 11:00. 7th facing west, Air temp 58°F . A snapping defense reaction noted on this animal. When disturbed the body was violently twisted so as to bring head & tail in contact while the body remained in relatively stationary position. More or less the reverse "coil spring" action of Batrachoseps.

† → L.B. Done very quickly. 11:45 2 more collected on the reverse route travelling S → N on Bonita Rd. Moments later 2 more taken just north of the house. 11:20.

D. Anderson
1955

Ambystoma macrodactylum

Feb. 27.

Rio del Mar, Santa Cruz Co., Calif. 1:40 P.M.

an adult female was collected under a flat board 14" square. The board rested on some fallen branchlets and was not in contact with the soil but about 1 1/2" off the ground. The situation was on the edge of an oak woods with a road clearing to the east. ~~and~~ Oak woods rise up on a hillside immediately west of the locality. Canopy cover was about 50-60%. Quercus agrifolia seemed to be dominant in immediate vicinity. The ♀ was gravid - eggs visible through the body wall.

Air temp - 8°C

Soil temp - 9.6°C

Ambystoma - 9°C.

When placed on the leaf litter on the oak wood floor the broken stripe pattern was an effective camouflage agent. The black ground color melted in with the soil & decaying leaves. The broken yellowish pattern blended perfectly with the many dead oak leaves littering the substratum.

No attempt to escape & no defense reaction noted.

J. D. Anderson
1955

Amphystoma macrodactylum

Valencia Lagoon, Rio del Mar, Santa Cruz Co.,
California

Mar. 18.

Juv. collected on Bonita Rd. at 8:50 P.M.
by Bob Golder. Air temp. 10°C , sky clear,
stars out etc. Little or no wind. Water in
small puddles on road.

9:15. 2nd juv collected 15 ft from road near
steep sided road cut - bank 5 ft high. It
|| - oak.

Road

sit among dried *Q. agrifolia* leaves. Yellow
color tends to blend in with dead oak leaves.

Soil temp $\frac{1}{2}$ " 9.3°C ; Air temp $\frac{1}{2}$ " 8.4°C

9:20 3rd juv on road up thru oak woods.
off at right angle to Bonita Rd.

9:35

4th juv. collected 10 ft from road in leaf
litter at base of bank. Bank about 6 ft high
with good oak forest above. This spot 50 yards
from pond. Soil sort of sand loam. Soil
temp. 9.8°C $\frac{1}{4}$ " under surface. Air temp. 10.2°C .

4 juv. *Oniscus asper* about same
size as *Amphystoma* collected within 8 ft
of *Amphystoma*. They however were not in
the leaf litter but clinging to the vertical
wall of the road cut.

9:51 - 5th juv. walking across sandy Bonita Rd.
towards the oak woods coming from pond. Bright
yellow orange both with broken pattern. Soil
temp $\frac{1}{4}$ " 8.2°C . Air temp $\frac{1}{2}$ " 8°C

10:05 P.M. 6th juv. collected on road. Facing toward
oak woods from pond.

10:16 7th juv collected on Bonita Rd. (pond path)
facing along rd. axis. Air temp 8.5°C

J. D. Anderson
1955

Ambystoma macrodactylum

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Nov. 19. 1 juv. collected on Bonito rd. 9:05 AM. Apparently coming from pond towards oak woods west of pond. Bright sunny day, no clouds. Road slightly moist from fog & dew. This specimen & all taken Nov. 18th were covered with particles of sand as though they had just emerged from burrow. Soil around pond & road edge sandy. Aneides & Eisaxia collected were not sandy & may have been active earlier this season. There had not been any rain in this region for several days. Ground & leaf litter were ~~are~~ moist but not "chipping wet".

Anderson
1956

Journal

Jan 31.

Trip to Rio del Mar, Santa Cruz Co., Calif + Saratoga, Santa Clara Co. Left Addison St., Berkeley at 7:45 A.M., picked up J. Robinson at 7:55. Drove via Rt. 17 to Rio del Mar. Much frost seen on hillsides while crossing Santa Cruz mtns. between Los Gatos + Santa Cruz. Arrived at Rio del Mar 10:20 A.M. The pond was greatly enlarged over its size this time last year - roughly 2X the area. Bonito Rd as usual was dotted with large puddles of water. Those in the shade ~~was~~ covered by a thin sheet of ice. We searched the margins + shallow portion of the pond for Ambystoma macrodactylum with no luck. Numerous masses of Hyla regilla eggs noted. Most were close to hatching. Water temp. 5.2°C . in shade about 9°C in sunny areas (depth 2 ft). Spent $1\frac{1}{2}$ hours in water then investigated Oak woods on W side pond. Batrachoseps, Ensatina + Hyla regilla found but not in usual numbers. Air temp between $6-7^{\circ}\text{C}$. One Ensatina had cl. temp of 6.4°C . For most part the amphibians were quite sluggish. No Aneides lugubris seen in usual haunts. No Ambystoma found. Later one active H. regilla collected at fringe of pond - bright green in color (Hopping in green grass). From here we drove towards Corralitos by way of 5 miles but found all possible amphib. localities completely flooded + collecting was impossible. Returned to H'way 1 + ate lunch (1:15 P.M.). Drove thru Santa Cruz + started North on Rt 9. 3 mi past Felton we collected 3 Aneides flavipunctatus in a springy hillside opposite a redwood souvenir shop. Ensatina + Batrachoseps taken at fringe of springy area in slightly drier places. One Ensatina taken under a Sequoiadendron log in middle of seepage area near where Aneides were caught. It was quite sluggish (Water temp. 11.2°C). Aneides, however, were quite quick. When log was first moved they remained

Journal

Jan. 31.

Trip to Rio del Mar, Santa Cruz Co., & Saratoga Santa Clara Co.
still for a few seconds & blended in beautifully with
the dark, muddy soil under logs. After any movement
on part of collector they moved rapidly to escape
using body undulation of Desmognathus. In fact
habitat & behavior is quite reminiscent of Desmognathus.
We followed Rt 9 via Ben Lomond, Boulder Creek &
Saratoga. Many likely regions were investigated for
Aneides & Dicamptodon but with no luck. At
Saratoga high flood waters have washed away
the rock habitat of Aneides & much else also.
A group of some type of eggs found under a
rock 4 ft about level of stream. They were not
resembling of Plethodontid eggs but did resemble
them. Under a pile of boards 50 ft above level of
stream we collected Eumeces, Taricha & 3 Peromyscus.
Returned home via Rt 9 to Aloha & thence to
Rt 17 & home to Berkeley at 7:30 P.M.

Journal

Mar. 28

Berkeley to Pinnacles Nat'l. Monument,
San Benito Co., Calif.

Left Berkeley at 8:15 A.M. after leaving Jill at U.C. (Speedometer 21705.0). Drove to Rt 17 in Oakland & took it to junction with US101 near San Jose. Cut off 100 towards Hollister using Rt 25. (10:05 AM). Crossed San Benito County line at Speedometer reading 21792. 3 miles later saw a White-tailed Kite hovering over an overgrown artichoke field. It flew back & forth over an area 150-200 yds long by 50 yds wide. Flying high overhead was a red-tail hawk. Stopped & made lunch about 1 mile N of the Pinnacles turnoff at 11:20 AM. I had made one previous stop to turn logs along San Benito River with no luck. After lunch drove up to Pinnacles turnoff & proceeded towards the monument stopping every few hundred yards to collect. Got 1 Hypsiglena torquata, saw several Sceloporus occidentalis & 1 Uta stansburiana. Drove on into monument to look over campsites. Almost all sites taken. 12:30 PM drove back out of monument. Collected 2 Anniella on way. Drove south towards Coalinga & King City outside monument. Road winds through rolling hill country. All fenced in tightly. Most areas near road are heavily grazed but country which is not grazed is bigger pine - interior live oak open parkland. Some hillside (particularly S-facing slopes) have sage & lupine mixed in with Adenostoma & what appears to be a Ceanothus. Went as far south as Monterey Co. line & then back just south (100 yds) of monument turn off

Journal

Mar 28

Pinnacles, San Benito Co., Calif

there was a juv. Pituophis catenifer DOR. Saved the specimen in formalin. Once in monument I drove to the old Pinnacles campsite where I had the entire area to myself. Hyla regilla Bids. calling all along the stream here.

Found several Batrachoseps attenuatus under rocks but did not collect any.

Birds seen in & around Pinnacles monument

Turkey Vulture

Parula

Y-bill Magpie

Black Phoebe

Plain Tit-mouse

Calif. Woodpecker

Mourning Dove

Muttal Woodpecker.

West. Kingbird

Wren-tit

Shrike

Ore. Junco.

Horned Owl.

Several Bats were heard overhead just after dark.

7:35 P.m. air temp. 44°F. Sky clear, stars burning brightly.

Mar. 29.

Pinnacles to Rio del Mar, Santa Cruz Co., Calif.

Left old campsite at 7:30 A.M. speedometer 21905.0

Drove north towards Hollister. Saw DOR Bufo boreas

1/2 mi S. Pinnacles near Rancho Pinnacles. There is

a flooded field here to West of road. Pond full of

Coots, several indigo ducks also. Picked up 101 near

Hollister & drove north on 101 to Gilroy. Took road over

Hecker pass to Watsonville. From Watsonville drove

south on US 1 to a pond Russell & I had spotted

last year. Large dump on one side makes that side

unworkable. The only other side not fenced in is a

mass of cattails so far the preserve still

Journal

Mar 29

Rio del Mar, Santa Cruz Co., Calif.

don't know whether or not *Ambystoma* lives near there. It should be checked at the first good rainfall next year. Drove north now on 1 to Valencia Lagoon. Ate lunch by the side of the lagoon. Then caught & measured some larvae.

Again most were found at the N end of the pond in grassy region where the water is clear. About 2:30 PM drove over to Corralito pond to check for *Ambystoma*. Caught 2 adult *Bufo boreas* & saw thousands of *Bufo* tadpoles. There are two ponds at the Corralito locality. One is merely a flooded field & appears to be shallow with little aquatic vegetation apparent. It has receded several yards since mid-winter. Both margins are muddy & it is impossible to walk to water edge. The second pond looks artificial & seems deeper. It was loaded with *Bufo* tads. Water muddy & clouded with great mats of pond scum & various algae. Made a number of sweeps with the dip net - lots of *Bufo* & aquatic insects but nothing else.

Returned to "Captor Hole" at 4 & made supper. After supper I walked along dirt road from the which joins Bonita Rd. near the center of the "hole". Followed this up to ridge & S along ridge. Several cabins (?) along road & several cleared ~~area~~ lots - no sign that a great building boom will descend on the place. The woods up top is really lush. Road came out at ~~to~~ US 1 about 150 yds S of the end of Bonita Rd.

Bird activity high powered. Chickadees seemed to be paired off. Red-wings were singing at a



Journal

Mar 29.

Valencia Lagoon, Rio del Mar, Santa Cruz Co. Catal
ford clip. Total list for the lagoon & ^{vicinity} ~~area~~

Hairy Woodpecker

Scrub Jay

Cal. Quail

Song Sparrow

Spotted Towhee

Bru. Towhee

Red-tail Hawk.

Coot

Mallard

? Gullfinch

Wren-tit

Chest-b. Chickadee

Ore. Junco.

P. shuft. Flicker

Red-wing

Allen Hummingbird.

Hermit Thrush

Robin

Bewick Wren.

Saw 2 Deer in oak woods & a Peromyscus
possibly sonoriensis hopped across road
at dusk.

Oenothera ovata growing in good number
at level of pond in moist areas but not in
real wet spots. Ribes in flower at edge of forest.

Caught 1 Gerrhonotus multicarinatus at
S end of pond under a board. No snake
seen.

Left Valencia Lagoon at 7:15. Drove N
on 1 to Santa Cruz. Took Rt 17 to Los Gatos,
Rt 9 to Sunnyvale (then Saratoga) & got on
Bayshore Freeway (101 Bypass) ~~at~~ at Sunnyvale.
Then across Bridge to Berkeley. Home at 9:30
pm. This route seems by far most satisfactory.
During rush hours it might be bad but otherwise
there is a minimum of stopping & a maximum of
freeway. I usually take a little more than 2 hrs.
While going on other side of bay averages an
hour longer.

Anderson
1956

Journal

Apr. 14 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Berkeley between 10:30 + 11 A.M. Crossed
Bay Bridge + drove S on 101 to Alemany Blvd
West of Alemany to Rt 5 (Skyline Blvd). S on
Rt 5 to junction c 9 thence to Saratoga +
Los Gatos. Took Rt 17 from Los Gatos to Santa
Cruz then on US 1 to Rio del Mar. Spent
afternoon mapping (partially) Bonita Drive +
"Salamander" Rd. Later we climbed up the S facing
slope opposite the collecting locality to photo-
graph the pond area. Took many pictures but
camera was acting up so none may come
out. We then drove S behind the oak wood
in Rio del Mar proper. The entire back
slope is a residential one providing little
in way of cover for *Ambystoma*. The slope
levels off more gradually than N side. Fine
way to flat grassy area which are heavily
burned. About 1-2 miles S is Monterey Bay.
We next drove out San Andreas Rd
which goes S from US 1 towards the Bay + in
the general direction of Watsonville. A badly
batheated DOR *Ambystoma tigrinum* was
found

Then Drove on to Sunset Beach State
Park which would be an excellent place
to camp. Saw more Bush Rabbitt than
I've ever seen before. Returned to Santa
Cruz for dinner. At 7:45 pm we began
a road check along "salamander" rd. 8: pm
10 feet in from "salamander" rd on drive way to
Cabin called Cloud 10 we found an injured

Journal

Apr. 14 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

A. m. croceum. (). The head was crushed across the eyes. Still living, however. It blended in with dried oak leaves in a wonderful way. Really difficult to spot. 8:15 a juv. (37 mm SV) marked (R F I L F 4) & released 35 paces before Garage on rd (L & M Castle Oaks). It secreted a blind or tail very much like Ensatinia.

Another juv. at 8:31 on rd opposite large Doug Fir which is a few paces down the road from an unidentified house (no name) (3rd house along Rd.) 36 mm SV, tail recently broken 16 mm from vent - just healed but no regenerative growth as yet. Rest of Road check produced no further Ambystoma. It had been chizzled lightly whole time. Finished check at 9:15.

Rel. Abundance of Ambystoma on Rd.

	juv.	ad.	Total
<u>Ambystoma</u> -	2	1	3
<u>Ensatinia</u> -	4	2	6
<u>Aneides</u> -	1	0	1
<u>Batrachoseps</u> -		4	4
<u>Hyla</u>		3	3

many large slugs, snails & millipeds & some carabid beetle sightings.

at 9:18 we began another check of the San Andreas Rd to Sunset Beach. Took about 30 min. Saw only 1 Hyla & 1 Ensatinia. Hyla in chorus all along Rd. Road fairly dry.

Returned home via 17 Santa Cruz to Los Gatos, 9 from Los Gatos to Sunnyvale & Bayshore & then to the Bay Bridge & then to Berkeley. Left Santa Cruz at 12:15 - home at 1:35. 1 hour 20 min. Wow!!

D. Anderson
1956

Journal

28

July 17

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Berkeley 8 am (DST), drove over Bay bridge & S
via Bayshore Freeway, Rt 9 & 17 to Santa Cruz. Thence
on Rt 1 to Rio del Mar. Pond area now completely
dried up. Soil only slightly moist where last
remnants of pond had stood. Checked boards, veget-
ation, logs etc for salamanders but found none.
Talked to Enid Mullin, real estate agent,
about developments in Rio del Mar. She said
that the entire area would be developed for
housing eventually but there would probably
be little change in the next few years. She
also spoke of building in the pond area for
housing but said that the state still owned
the property & nothing would be done for a
number of years. 12:30 pm - drove to
Bos Corralito to check ponds but found
that all ponds had been drained & are being
cultivated. Drove to the pond S of La
Selva Beach. The pond there was heavily
grown over with Eleocharis but there was still
quite a bit of water present. Depth up to 20".
Fished with the dip net for 3/4 hour with no
luck. Found only H. regilla larvae - mostly close
to transformation. Many large Rana aurora
larvae present also. Next checked the stand
of willows S of pond. Got 2 A. m. croceum
much to my surprise. Expected A. tigrinum
to be in here, especially since one was found
DOR in vicinity last spring. This bears
hooking into. Left here at 2 pm & drove thru
Santa Cruz to Scotts Valley in S. C. mtns. Worked
small pond there with no luck. Drove home
from here. Got back at 4:45 pm.



D. Anderson
1956.

Journal

Sept. 7. Trip to Rio del Mar, Watsonville & Point Lobos.
Picked up Dot & Dan Wilhoft at 7:45 AM (PDT)
and drove to Valencia Lagoon via the usual route.
Spent an hour tearing apart a medium sized
Neotoma house. Hoped to find aestivating Ambystoma
- no luck. at bottom of house soil was very
moist. could be packed into balls which did not break
upon tapping. Some water was squeezed out of the
very deepest soil-humus layer. 11:30 we drove
S to Watsonville on Rt 1 & then left on unnamed
rd towards Arroyos - first left after crossing
Pajaro River. With aid of Topo sheet we found
a small pond 1/2 mile off this main road on a
smaller paved road which turns off to Arroyos.
Here we found hundreds of Taricha granulosa,
newly metamorphosed juveniles, & several adults.
Saw Rana aurora, Hyla regilla & a juv. Coluber
constrictor. This pond is smaller than either
Valencia Lagoon or the Ambystoma spot S E of
La Selva beach. There was still water in it
but it is most likely temporary. Saw no
Echochelus as at other localities. Lots of
Polyzonium in water. Taricha found in much
same situation as are the macrodoctylem at
the La Selva beach localities - usually logs in
shade of willows at ponds edge. - Why is
Taricha here & not elsewhere - are Ambystoma
& Taricha mutually exclusive??
Returned to main road & stopped further
east at a larger pond. This, however, was full-
really full - of bullfrogs & there was no other
sign of ~~life~~ life, save 1 roat. From here we
continued in an easterly direction to jct. C 101.
Thence S to a jct W towards Castroville. Saw 2

Anderson
1956

Journal

Sept. 7. Trip to Pineda Mar, Watsonville & Point Lobos.
places along this road which will bear checking at
a future date during rainy season. At Castroville
we got back on Rt 1 and drove S to Point Lobos Reserve.
ate lunch here & spent rest of the day birding &
observing intertidal & tidal invertebrates.

Anderson
1956

Ambystoma macrodactylum croceum

Mar 16. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Searched for larvae along the fringes of Valencia lagoon.
45 min. spent at SW + West edges with no luck. Sweeps
were made with a long handled dip net. The S. edge of
lagoon was heavily choked with + cattail.
The W. edge with . Water was quite deep
all along W side with only a little (2-6 ft)
of shallow water near the road (Bonita Rd.). The
heavy vegetation began after this + extended out or
far as 40 ft. Many Hyla tadpoles found at S end
but few along W side. Water 2-2 1/2 ft deep all
along fringe of on W. side. At the NW +
N end of lagoon the habitat began to look more
favorable. There were long stretches of shallow
water 12" or less. There was less vegetation - that
in ^{few} cattails + no . Grass shoots were
coming up in abundance + the water was very clear.
This portion of the pond reminded me much of the
habitat of Ambystoma opacum + tigrinum larvae
in the east. In the shallower places Hyla tadpoles
were fantastically abundant + a dip of the net would
bring up dozens. After 20 minutes in this area I
scooped up an Ambystoma larva. It was in clear
water about 5" deep but I had not seen it. It
must have been on the bottom. There were not
quite so many Hyla here - about 6 or 7 per dip.
During the next hour 20 Ambystoma were taken -
none of which were seen before being brought up
in the net. They must lie on the bottom amidst
the vegetation + mud. All were quite small +
taken within 15 ft of shore. None were taken in
water less than 4" deep nor in water greater than
8" deep. Actually they seemed to lie in "deeper"
pools (4"-8") in shallow water (1"-4"). Best results were

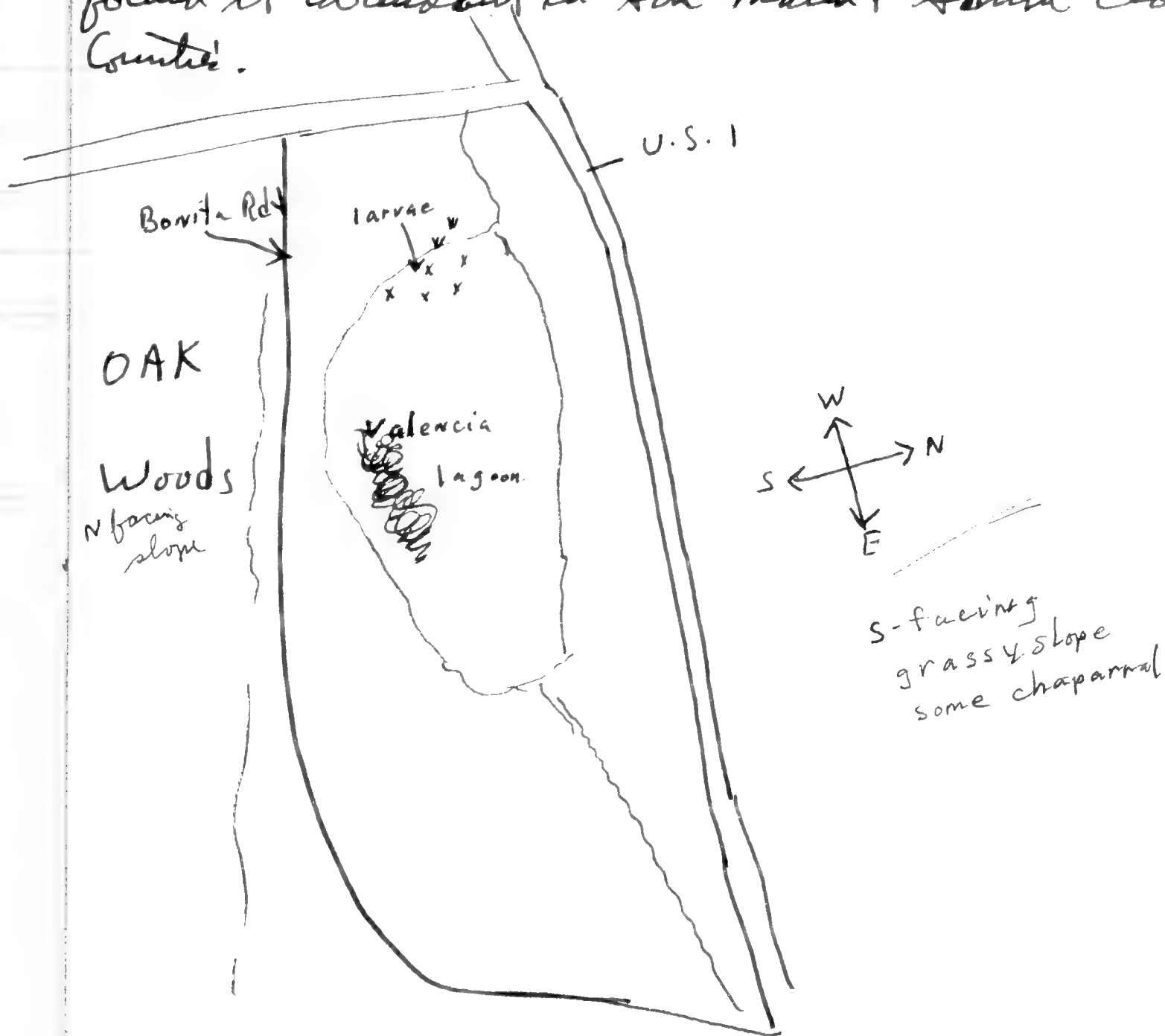
Anderson
1956

Ambystoma macrodactylum civaceum

Mar. 16

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
obtained by sweeping the net along the bottom,
without digging into the litter on the bottom, in water
from 5"-8" deep & in the vicinity of a clump of
(Juncus?) heavier vegetation (but not in the clump!).
As a rule none were taken where Hyla were
most abundant (shallower water). Water temp. 54°F
Air temp. 65°F . The sun was shining brightly.
This end of lagoon is also best lighted.

Again we found no Taricha here but
found it abundant in San Mateo & Santa Clara
Counties.



Journal

Oct 29 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left Berkeley at 5:15 PM (PST) in a heavy rain. Drove south on Bayshore Freeway to Sunnyvale and then on 9 to Saratoga + Los Gatos. Took 17 across Sta Cruz Mtns and then Rt. 1 to Rio del Mar. No rain from San Mateo to Los Gatos. Heavy rain in Santa Cruz Mtns + along coast. At Valencia Lagoon everything was very wet. Large puddles in Bonita Rd. 15 Ambystoma macrodactylum taken on Bonita Rd. ~~XXXXXX~~ Others were marked + released. 1 Ambystoma taken on the highway directly opposite the center of the pond area. This one capture showed clutch the idea of random dispersal. 6 Ensatina seen on Bonita rd (5 ad. 1 juv.), 2 Batrachoseps (1 ad. 1 juv) also. Hyla regilla active everywhere, mostly juveniles seen. 1 Hyla talking off in the oak woods. At 11 pm (PST) I left the lagoon to drive to another pond south of here (along San Andreas Rd.) 1 Ambystoma collected on San Andreas Rd. 8/10 mi. SW of the Jct with Rt. 1. To the west of Rd here there is a depression which could hold enough water to be a temporary pond. This animal could of course be from the Valencia population, although it was moving in the opposite direction. No further Ambystoma were seen on this road. Went as far as the pond 1.5 mi SE La Selva Beach. Returned home to Berkeley at 1:45 AM (PST)

Journal

51

Dec. 1.

Trip to Stockton, San Joaquin Co., Calif.

This trip an attempt to locate a possible locality for Ambystoma macrodactylum. 1 specimen exists in the U.C. Dept of Zool. at Davis collection.

It was collected along Country Club Blvd. 1/4 mi. from San Joaquin river. A careful search along the present day Country Club Blvd. produced nothing. The Country Club still exists but has no habitat which looks like Ambystoma habitat. The surrounding area has been developed into a residential area. No suitable Ambystoma habitat was seen. There is considerable peat moss in this area (XDDZ spec. collected from peat.)

but no ponds exist there now. One possibility exists in this area. Along the Calaveras River about 1 mile east of the College of Pacific campus we saw several areas along the stream bed which look like good Ambystoma habitat.

Much of the stream margin is reminiscent of areas where A. tigrinum + A. opacum breed in Cape May Co., New Jersey. This of course may be occupied by A. tigrinum here in Stockton.

It also could be a channel for A. macrodact. since the Calaveras River comes from macrodact. country in the Sierra Nevada.

Journal

Jan. 24.

Valencia Lagoon + other parts of Southern Santa Cruz Co. Calif
Left Berkeley shortly after noon. There were showers throughout the AM in Bay Area + rain the previous night. Arrived in Rio del Mar at 3 pm. No sign of rain that day but ground was moist from previous days rain. Checked the lagoon + found it to be dry - yet! 1 gravid ♀ macrodactylum located in clump of willows along north edge of "lagoon" area. No others found despite rather intensive search of willows + the oak woods. Drove to the La Selva Beach (Ellicott) locality. It too was dry but found 1 ad. ♂ in breeding condition in a clump of willows.

After dark the entire Valencia Lagoon study area was searched with Coleman lantern. No Ambystoma found. 1 Cerreides lugubris (ad. ♂) seen. No rain + rather low temp.

Trap line (75 museum specials) set in Oak Woods and Bocharia edge situations. 6 Peromyscus maniculatus, 1 P. californicus + 2 P. truei collected in woods. 3 Reithrodontomys megalotis (2 in oaks, 1 in Bocharia) collected.

Jan. 25.

Began raining about 9 AM + continued until 5:30 PM. Thereafter intermittent heavy showers until 9:15 pm. Drove S + W to Watsonville, mainly by way of farm roads. Saw several possible Ambystoma localities. Best was just N + W of La Selva Beach locality + bears looking into. Returned to Valencia

J. D. Anderson
1957

Journal

Jan 25. Valencia Lagoon + Southern Santa Cruz Co., Calif
Lagoon at 3 pm. Rain very heavy + steady. After
Dark 10 ♀ *macrodactylum* + 3 ♂♂ were captured
marked + released. All of these were in prime
breeding condition + all were moving towards the
"lagoon" from the oak woods. 1 juv was ~~not~~ marked,
it was moving from the ~~pond~~ towards the oak woods.
Interesting factor is that the main wave of juveniles
had passed long before the adults began their
breeding migration. Are there two sets of stimuli
involved - could be ~~so~~ either a temp or a rainfall
threshold involved. Cannot discount the effect of
the "unseasonable" early rain. Perhaps the adults
must be at "sexual" peak before they move + the
first rains were too early to hit this. Should be
checked.

Rain stopped at 9:15. I thought it best to
check other cross-road check - before it became
too dry. Did this with ~~no~~ negative results.
Saw several *Aneides* *heugubii* and 1 *Euslatina*
on San Andreas road. No *Ambystoma* activity.
Left for home about 10.

G.D. Anderson
1957

Journal

Feb. 22. Trip to Valencia Lagoon Study Area, Santa Cruz Co., Calif.
Left Berkeley at 9 AM. Arrived Valencia Lagoon.
11:30 AM after 1 stop in Santa Cruz for lunch.
Sign of much recent rainfall, skies now overcast.
Rain began about a little after noon. It
rained steadily throughout the day & night.
A thorough search was made of the "pond"
area. No standing water as yet although the
soil was spongy & soggy water in places. No
salamanders found here. 2 ad. gravid ♀♀
located in oak woods, marked & released. Left
Valencia at 3 pm and checked "La Selva Beach"
locality. There is some standing water here
(see field notes species account). Found no Comlystoma.
Later I visited Mr. Edwards who owns this
land & have his permission to work at this
locality any time. He mentioned that a friend
of his has a pond on Spring Valley Road
about 1/4 mi W of his pond. He reports that
large black salamanders with "yellow" markings
are found in this when it is drained. These
could be A. tigrinum if they are as large
as he claims. The dead tigrinum found last
year was close to Spring Valley Road. Mr.
Edwards may be very helpful as study proceeds.
After supper returned to Valencia. Worked Bonita
from 6:45 to 8:40 - marking 12 ♂♂ + 3 ♀♀. Went
to "La Selva Beach" area & collected 3 ♂♂

J. D. Anderson
1957.

Journal

Feb. 22 Trip to Valencia Lagoon, Study Area, Santa Cruz Co., Calif.
in water. Saw 3 others. Hyla regilla in full
choir, many clasping. Many fresh egg
masses all about. Rana aurora ♂♂ (4 or 5)
seen. No ♀♀ aurora observed. Returned to
Valencia at 11 pm. Collected 2 gravid ♀♀
for study + marked 2 others. Got 1 return
of ♀ marked this Am. Left area around
12-12:15 am. Arrived Berkeley 3:30 am.
Fog + fatigue made driving quite
slow.

G. D. Anderson
1957

Journal

March 9 Trip to Valencia Lagoon, Rio del Mar, Santa Cruz Co. Calif.
Left Berkeley 7:30 am, arrived Rio del Mar at 10:15 am. To my surprise there is yet very little water in the "lagoon". There are several scattered pools essentially in the central area just west of Iron Green House and opposite westernmost clump of willows. These all are about 3 ft in diameter and range from 2"-4" deep. Many Hyla eggs present. A careful (hands + knees) search turned up about 30 eggs, presumably Ambystoma. These laid singly along twigs + dead plant stalks (see species accounts for details). Searched the willow area + oak woods but found no ambystoma. This has been a dry + warm day, not good salamander weather. No evidence of a very recent (2 days) rain. Walked E in lagoon area + found that Valencia Creek is running fairly well + if it continues the pond should fill within a week or two. Spent most of the afternoon searching for eggs down at "La Selva Bloch" locality. Saw many Hyla + Rana aurora masses but no Ambystoma. Sweep with dip net produced no adults. After dark both Valencia + "La Selva" localities, in + out of water, were searched with Coleman lantern. Only 1 salamander, No. 102 RH2; LHY (see notes) a recapture. Left Santa Cruz about 11:30 pm, arrived Berkeley 1:30 in morning.

J. D. Anderson
1957

Journal

March 23 Trip to Valencia Lagoon, Rio del Mar, Santa Cruz Co. Calif.
Left Berkeley at 8 am with Det & Dan Wilhoft.
Travelled via Skyline Blvd. Stopped at
a pond 4 1/2 m. S. San Francisco Co. - San Mateo Co. Caught
1 large ad. Thamnophis scitafis tetraglenia &
1 juv. ~~scitafis~~ Continued on towards Santa Cruz
with an occasional stop for collecting. Arrived
at Valencia at 11 am. The road was
much drier than two weeks previous. The
pond area was completely dry. Those areas
which contained eggs ~~to~~ on March 9 were not
hard & dry. The stream (Valencia Creek) was
completely dry also. It would seem that
the reproductive effort of the year will be
absolutely zero. Even a big rain storm would
do little good at this point. Thoroughly
searched oak woods for adults but found none.
Drove over to "La Selva Beach" locality
for a check. Still good water standing.
Ethechnis coming up fast. For Unable to
find larvae but they are probably still king &
this place has always been tough to work with
a net. Searched under willows with no
luck.

On way back to Valencia we picked up 3 S.
occidentalis + 1 Genhondus multicarinatus.
Caught a Eutamias at Valencia & then
went home.

Ambystoma macrodactylum croceumMar 29. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Hunted for larvae in the lagoon between 12:30 + 2:00 PM.

Found 12 which were measured + then released. Collected several along the east side of pond this time - didn't get to work at last time. Also got 1 on W margin.

All of these however were at the northern most end of pond regardless of which side they were on. Several were taken at the exact same location as on Mar. 16. The larvae were remarkable in their size - almost all were larger than ~~any~~ the largest of lab. reared individuals. Two small ones about size of those collected on Mar. 16. These may be from a later laying. All larvae were collected in water from 6" - 9" deep + in relatively clear areas. No algal mats present where larvae taken. All taken where new, green grass shoots coming up. Grass has extended much farther out into pond as compared to last trip (Mar. 16). Increase in grass make collecting more difficult - net doesn't sweep bottom properly. Many more hiding places for larvae. All salamanders had bulging tummies - well fed!

	Size	depth	(S) temp	(B)	Remarks
1-1:35	16 mm	6"	58°F	51°F	Hwy side at end of pond.
	29 mm	8 1/2"	57°F	49°F	" "
	28 mm	8"	57°F	48°F	no sign of hind feet on this or one above.
	35 mm	8 1/2"	57°F	50°F	small hind limbs. Hwy side 20 yds from end of pond.
	30 mm	9	57°F	47°F	tiny hind limbs.
	33 mm	same or above			" " "
	19	same			first we ever spotted before netting.
	29	7"	—	52°F	
	21	no data			
	35	"	"		
	28	8"	56°F	48°F	2 in 1 scoop.
	28	"	"	"	

 $\bar{x} = 27.05$

19-35

34

Ambystoma m. croceum

76

Cape to Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

Marking Study

	marked.	Sex	S-V	Remarks
Apr. 10	1. RF-1, LF-1	♀	43mm	pattern in narrow band.
Apr. 10	2 RF-1 LF-2	♂	53	few breaks in pattern. ^{cl.} smaller
Apr. 10	3 RF-1 LF-3	♂	58	double band - rather broken
Apr. 14	4 RF-1 LF-4	juv	37	milky secretion from tail
Apr. 14	5 RF-2, LF-1	juv	36	recent break of tail (16mm)
June 16	6 RF-2, LF-2	juv	38	newly transformed, no good pattern
June 16	7 RF-3, LF-3	juv.	39	" " , pattern forming
June 16	8 RF-2, LF-4	juv.	37	" " , gill stubs present (stub tail)
June 16	9. RF-3, LF-1	juv.	38.	" " ; dorsal flecking
June 16	10 RF-3, LF-2	juv	36	" " ; gill stubs, flecked.
June 16	11 RF-3, LF-3	juv.	40	" " ; pattern forming.
June 21	12 RF-3, LF-4.		40	" "
June 21	13 RF-4, LF-1		39	pattern not visible
June 21	14 RF-4, LF-2		39	" "
June 21	15 RF-4, LF-3		35	" "
June 21	16 RF-4, LF-4		34	
June 21	17 RH-1, LH-1		35	
June 21	18 RH-1, LH-2		36	
Sept 19	19 RH-1, LH-3			
"	20 RH-1 ⁺ , LH-4			
"	21 RH-1, LH-5			
"	22 RH-2, LH-1			
"	23 RH-2, LH-2			
"	24 RH-2, LH-3			
"	25 RH-2, LH-4			
"	26 RH-2, LH-5			
"	27 RH-3, LH-1, RF-2			
"	28 RH-3, LH-2			
"	29 RH-3, LH-3			
"	30 RH-3, LH-4			
"	31 RH-3, LH-5			

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

Sept 19.	marked	sex	SV	Remarks.
	32 RH4, LH1	juv	40	
	33 RH4, LH2	"	42	
	34 RH4, LH3	"	42	
	35 RH4, LH4	"	34	
	36 RH4, LH5	"	39	
	37 RH5, LH1	"	37	
	38 RH5, LH2	"	41	
	39 RH5, LH3	"	41	
	40 RH5, LH4	"	40	
	41 RH5, LH5	"	41	
	42 RF1, RH1	"	39	
	43 RF1, RH2	"	40	
	44 RF1, RH3	"	38	
	45 RF1, RH4	"	40	
	46 RF1, RH5	"	40	
	47 RF2, RH1	"	41	
	48 RF2, RH2	"	41	
	49 RF2, RH3	"	42	
	50 RF2, RH4	"	35	
	51 RF2, RH5	"	34	
Sept 20	52 RF4, RH2+3	"	-	
	53 RF4, RH2+3	"	-	
Oct. 7	54 " " " "	"	41	taken under leaf litter, some
	55 " " " "	"	41	just under soil, under willow
	56 " " " "	"	42	tree NW corner of pond area
	57			"
	58			"
	59			"
	60			"
	61			
	62			
	63			
	64			

D Anderson
1956

G. m. Crocicum

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Oct 7. 65 RF 4, RH 2+3 juv. sv Road (Bonta)

66 " " " " "

67 " " " " "

68 " " " " "

69 " " " " "

70 " " " " "

71 RF 2, RH 3+4 " 38 " "

72 " " " " "

73 " " " 37 " "

74 LF 2, LH 2 (3) 43 " "

75 RF 2, RH 3+4 " "

76 " " " " "

77 " " " 41 " "

78 " " " " "

79 " " " " "

80 " " " Hiway

81 " " " Bonta Rd

82 RF 2, RH 2, 3+4 " "

83 RF 2, RH 3+4 " "

84 " " " "

85 " " " "

~~RF~~

24 86 RF 3 RH 1 ^{gravid} ♀ tail fin 57-53 - 5 yk w full w/lt on side Lm

Ambystoma macrodactylum croceum

Apr. 10.

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

Road Check along dirt road up into oak woods.

1 juv. Euscelinus - 7:10 pm 25 yds from Bonita Rd.

1 ad. Hyla - 40 yds up road. 7:15

1 ad. Hyla. 10 yds past first turn in road.

1 ad & Ambystoma 50 ft from entrance to Cloud 10 - (a house) on sandy road. 7:20 pm. Light rain coming down. Had been raining intermittently since 4 pm. Road damp but no wet in this spot. A clearing lies west of road at this point. Many fallen logs in the clearing - may be good spot to check.

Another adult Ambystoma on rd. 245 paces N of Pinchot Cottage + 95 paces N of Big Douglas fir (E side of Rd). This ♂ was standing right in a puddle where the road was extremely wet. 7:45 - lost 20 min. rain has been very hard.

8:30

3rd adult Ambystoma ♂ taken on Bonita Drive between white house with cypress tree + metal garage. It was walking rapidly in a southerly direction. No other Ambystoma found. Total of 15 Hyla regilla seen on the road, 2 Aneides lugubris, 3 Euscelinus eschscholtzi + 3 Batrachoseps attenuatus seen on Road check. Many snails out, but only 3 or 4 Bannana slugs.

Began Road check at 7:10, ended at 8:40.

Sept 19 Valencia Lagoon Rio del Mar, Santa Cruz Co., Calif.

After rain fall on nights of 17th + 18th a road check was made to see if Ambystoma were active. ^{7:45}~~8:00~~ pm (PDT) we began a walk up road which winds from Bonita Rd thru woods. No Ambystoma seen. 2 Aneides + 2 Batrachoseps seen. 1 Batrachoseps on the road, Aneides + 1 Batrach. on wall of road cut. Went up road as far as old Garage then returned.

Anderson
1956.

Amelyptoma macrodactylum croceum

- Apr. 10 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
- ① 1 ad ♀ cl. temp 12.5 seen on rd. 50 ft from entrance to Cloud 10. Air temp. $\frac{1}{4}$ " above leaf litter. Marked & released.
- ② 1 ad ♂ cl. temp 10°C, temp. $\frac{1}{4}$ " above road 9.6°C, leaf litter 9.8°C road very wet. 245 (fmb) same place below Pinchot
- ③ 1 ad ♂ cl. temp 12°C, air temp 10°C. marked on Bonito Drive midway between metal garage & parking spot.

- Apr. 14
- ④ 1 juv. SV-37mm. 35 paces W of L+M entrance (open garage) Temp. at Rd. surface 50°F.
- ⑤ 1 juv SV-36mm (tail broken) - exactly opposite Doug Fir (which is on pond side of Rd) which corner after passing 3rd House (between Cloud 10, L+M, Doug)

June 16 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
(6-11) All newly transformed animals; some with gill stubs. All taken under mats of vegetation where water had recently stood. 1 to several inches of fine mud under mats, moisture aplenty. Pattern development appears to follow lab reared animals i.e. in most of these the typical croceum pattern is not yet visible. All taken at a fairly central point in pond. N of Iron House, just ~~SW~~^{SE} of willows (Westernmost group & due east of a large clump of Typha).

- A-1 Another newly transformed animal from same region or above. Accidentally cut wrong toes. Toe clip pattern. RF-3 - LF 1+2 SV-39, Tail 36. (C scattered spots)
- A-2 Another RF3 - LFO (isolated) SV-37, Tail 41 (C tail fin present & gill stubs present).

D. Anderson
1956

Ambystoma macrodactylum croceum
marking

June 21 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

#12 1 juv. RF3LF4, SV 40 mm, tail 39. found under mat of vegetation. In shallow depression in mud. Just S of 2nd stand of Tule(?) & E of large willow. Temp. under mat at surface of mud 58°F . Temp on top of mat (bull shaded) 62°F . (Recently dried up area)

#13 & 14. Under small, wet, rotten log. 2 ft from 2nd Tule(?) dump. Water recently dried up (small bivalves present). Cool & shaded, 2" mud under log.

#15. Under log (3 ft long, 6" diam.) in shade of the large willow tree. Lots of willow leaves & twigs about temp. under log. 47°F .; air temp under willow 42°F .

#16. Under veg. mat 20 yds due S of large willow.

#17 same as above.

#18. same " "

Ambystoma macrodactylum

June 16 Valencia lagoon, Rio del Mar, Santa Cruz Co., Calif.

Sizes of 8 ~~to~~ juvenals measured in field.

(snout to posterior part of hind limb insertion, tail from here to tip)

- #
6. SV-38, tail 40 - total 78 mm.
 7. SV-37, tail 35 - total 72 mm
 8. SV-37, tail 33 total - 70 mm
 9. SV-38, tail 42 total - 80 mm
 10. SV-36, tail 14 total 50 mm (stubby tail)
 11. SV-40, tail 41 total 81 mm.

measurements of 2 brought to lab - chlorotoned.

~~SV-41~~ SV-41 tail 45 total 86 - gills small (4mm)

~~SV-41~~ SV-41 tail 41 total - tiny gill stubs

Tail length not a good measurement as yet, since tail fin in various degrees of atrophy - expect that tail shortens as transformation proceeds. Used ~~snout~~ snout to limb insertion since vent not yet in adult condition - actually this approximate measurement to ant edge of vent quite closely.

2 animals (above) measured in lab. Dorsal pattern fairly well developed but washed as yet by dark pigment. May not have shed skins as yet. Will keep alive for study.

P112.34. Pygids.

Anderson
1956

Amphystoma macrodactylum

May 5 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Search made for larvae between 2:15 + 3:20 pm D.S.T.
The W. end of pond examined by usual dipping method
produced no larvae whatever. The pond has
shrunk considerably. Areas where larvae were very
abundant in mid + late March are either dry or represented
by shallow pools choked with Eleocharis. Extensive
growth at this end + also along N side of pond are
heavily grown in by Eleocharis. Suitable areas
for larvae are now much farther out towards
center of pond due to dispersal of Eleocharis. However
pond level has dropped + depth of water at fringe
of Eleocharis is still optimal for salamanders.
Spread of Eleocharis is undoubtedly related to
extent of areas of shallow water. Rechecked pond
for larvae between 6:15 + 7:45 - obtained 14.

Most were collected along N side of pond in
vicinity of large willow tree. All taken in areas of
sparse Eleocharis and at depths of between 9 and
12". Following data from measurements of these 14 larvae.

61 mm	11" water.	
42 mm	11"	
63 mm	11 1/2"	
34	11"	n = 14
56	11"	$\bar{X} = 56.28$
40	9"	
64	9 1/2"	
55	10"	
63	10"	
66		
60		
61		
68		
55		

↑
time did not permit
depth measurements
but approx. some
or above.
↓

Ambystoma macrodactylum

June 16 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
11 newly transformed or transforming individuals found
at edges of shrinking pond. Standing water reduced
to 1 large pool 10-25 yds diameter, + several smaller
scattered pools. Greatest depth of water ca 4". Most
salamanders were found under vegetation mat in
area which have just dried up. 1-3" of mud
under mats - plenty wet. Several transforming
larvae found at fringe of pools, in vegetation.
Some temp. data pertinent to collection area.
Temp 4" water (shaded by vegetation) on bottom 55°F
at surface 63°F.

Temp at surface of mud under vegetation mat - 58°F.

" " 58°F

" " 57°F

" " 57°F

Temp 1" under water 61°F.

~~None~~ None of 11 larvae show adult croceum
pattern as yet. Some show beginning of pigment
aggregation seen in late development. Actually
the lack of pattern makes animals almost
invisible in mud.

Other life under mat - swarming with insects
of every type - mostly small. Tens, newly
metamorphosed Hyla regilla everywhere.

A large, dead Thamnophis sirtalis fitchi
seen near collection spot. Mallard Ducks
about.

All but 3 of this sample marked & released.
The 3 non-marked were released also.

Ambystoma macrodactylum

- cl. 6700 ft
- June 26 Big Meadows, along Elletts Pass Road, Calaveras Co., Calif.
Collected large series of small larvae in pond at side of road (South side). Pond probably temporary. Surrounded by pine trees. 50 yds long by 20-25 yds wide. No vegetation on bottom. Bottom litter mostly pine needles, water reddish in color but quite clear (probably highly acid). All larvae taken at between 6"-12" depth. Few Hyla tadpoles present. Only 1 age class of larvae present. Apparently no stream enters pond - must be melt off from snow. 1 Thamnophis taken at this pond had 2 Ambystoma larvae (same size as those collected) in stomach. Greatest concentration of larvae near fallen logs - near shore line. Few larvae away from shore. None seen floating - all larvae remained close to bottom. Made netting difficult. No adults found in vicinity.
- June 27. Grass Lake, near Luther Pass, El Dorado Co., Calif.
3 tiny (newly hatched) larvae taken at fringe of very large shallow pond. Strong bloom of water thru middle of pond but margins quiet. Pine needles & cones littered the bottom. Very difficult to find, stayed close to bottom. Many Hyla larvae & some R. muscosa larvae in water.
- Aug. 7 Big Meadows, along Elletts Pass Rd, Calaveras Co., Calif.
about 50 newly transformed salamanders taken under logs & pieces of wood & bark. All were in depression formed by newly dried up pond. Only water restricted to puddle 4' across & 2" deep. No Ambystoma in water. Large numbers found under small pieces of wood in particularly damp spots. 19 under one piece 8" long & 4" wide, in shade of a large log. Temp of mud 17 °C. 13 found under another of approx. same size & position, temp of mud °C.

Ambystoma macrodactylum

Aug 7. Big Meadows, 6500 ft, Calaveras Co., Calif.
5 were found under large log 6 ft long \times 1 ft diam
3 of these were entwined. Salamanders were clumped
in case of 19 & 13, one on top of other & entwined. Many
still have gills but color pattern is developing
but not yet fully developed. Pond was approx.
90 yds long & 45 yds wide at greatest extent. S
bank lined \bar{c} fir trees giving some shade to that
side. Few oaks & birch on N side, thus little
shade. All dried up since June. Garter snake
seen this time, 4 collected lost limbs. Many transform-
ing Hyla regilla seen. 1 Thamnophis collected, had
1 Hyla regilla in stomach.

Temp. under big log where 5 were collected 19.5°C
Ground temp (bulk shaded) along side log 22.4°C.

Anderson
1956

Ambystoma macrodactylum croceum

July 17. 1.5 mi SE La Selva Beach, Santa Cruz Co., Calif

I collected 25 yards from edge of large temporary pond in open field. 1st taken under willow log 3 ft long, 1 1/2 ft diameter. Soil moist but not wet (no water could be squeezed out). Net work of mammal burrows under log (Microtus californicus seen in one of burrows). Isopods, earthworm + earwigs under same log. Transforming Hyla regilla near log but none under. Stand of willows begin 10 ft behind log. No vegetation on ground surrounding the log. Soil all around quite dry except at very edge of pond + under willows. 2nd taken under small board, 2 ft long, 2" diameter. Board buried about 1/2" ~~in~~ in moist soil. Actually under a spreading willow tree. Soil under board only slightly moister than surrounding ground which is fairly moist under trees. Many isopods under board. Numerous other boards + logs in this area but no further salamanders taken. Several boards used by small H. regilla + almost all had isopods under them. Entire S side of pond blanketed by willows. W side bounded by rail road tracks, other two sides by grassland + cultivated land. Pond still extensive in area but choked with Eleocharis - to such extent that sweeps with net were ineffective. See journal + future notes for description of this region.

July 27. Same locality

I collected under pile of small sticks + twigs in a depression 4 ft wide + 2 ft deep. 15 yds from moist edge of pond. Soil moist under debris. Temp. alongside salamander 64° F. 2nd taken under willow log (3 1/2 ft long, 6" diam.), 40 yds from pond. 62° F under logs. Soil moist.

Anderson
1956

Ambystoma m. croceum

Sept 19 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Upon return from woods we turned west (& left)
onto Bonita Rd. 15 yards from jct a juv (~~♂~~ ♀) was
found and soon 7 others found between jct and Joan
Green residence. While marking & measuring these
Sil & Dot found 14 more slightly west of Joan Green
residence. We marked there at East end of Green
house and picked up others as they crossed road in
immediate vicinity. Total of 33 marked. 22 more
seen but not marked. All but 2 of these 55
salamanders were moving from pond to oak woods,
this judging from their movements — some were seen



walking out of brush at edge of road &
move across road towards woods.
Salamanders were still abundant
when we left the area at 1:50
am. (PDT).

12:30 AM (PDT)

temp. under $1\frac{1}{4}$ " sand at roadside 14.2°C
" 1" above road surface 13.3°C .

Sept. 20. 2 A. m. croceum marked as they moved from
pond toward woods. Ground much drier. Bright
moon, sky clear.

9:45

temp at surface of sand at roadside 12°C
" $1\frac{1}{4}$ " under sand 14.2°C
Air temp. 1" above sand. 11.8°C

Anderson
1956

Ambystoma macrodactylum

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Oct 7. 7 juveniles captured, marked + released. All taken just under leaf litter at North East end of pond area under a spreading willow tree. The willow covers this area so as to keep it almost entirely shaded. Leaf litter is up to $\frac{1}{2}$ " deep. Soil under litter is dark + moist. Contrasted with soil of surrounding area it is loose + movable, not caked + ~~the~~ packed hard as it is in exposed areas or at fringes of willow clumps. No water could be squeezed out of soil but it could be moulded into a pellet which did not break or crumble when tapped. Temp under leaf litter 15.4°C , air temp $\frac{1}{2}$ " above litter 15.2°C . 1 salamander was found 1" inside of a shallow, small (1" diameter) burrow. Another was found 8" inside of same burrow. Remaining 5 very near surface, usually in a cup like depression + always under litter. All were coiled tightly when found + made no attempt to escape. Time 3:15 pm (PST).

At 6:45 (PST), $\frac{3}{4}$ hr after dark this same region was checked with a Coleman lantern + one of the Ambystomas was found moving over the litter slowly. It pushed under the litter using snout + disappeared quickly. This was one of the animals marked in the afternoon.

10 Ambystoma were marked as they crossed Bonita Rd. All but two were moving (or facing) from pond area towards the oak woods. The two exceptions were facing E east and parallel to pond area. There were all taken between 6:30 + 9:50 pm ~~PST~~ (PST)

At 6:40 when # 62 was taken temp at surface of Rd was 16.2°C ; bulb held against side of salamander read 16.0°C . At 7:35 when nos. 64 + 65 were taken (65 just as it emerged from brush on pond side of road) temp $\frac{1}{2}$ " above litter at roadside was 15.8°C . Temp in litter was 15.6°C . # 63 was taken on road facing pond at 9:50 (2 hrs + 25 min) after marking. Temp $\frac{1}{4}$ above road 14.6°C .

Anderson
1956

Ambystoma macrodactylum

- Oct 7. 1.5 mi. SE La Selva Beach, Santa Cruz Co., Calif.
1 subadult collected under large log 6' x 6". Soil
sandy + relatively moist. Log very close to base of
an old Willow tree + is well shaded by the tree. Temp
under log. 16.2°C. Isopods, small Coleoptera + 2 Hyla
regilla under same log. No other salamanders
seen here despite thorough search.

Color of dorsal blotching. Mary + Paul. Pl. 12. 9K + vic.

Anderson
1956

Ambystoma tigrinum

Apr. 14 Ellicott, 1.5 mi S E. Ja Selva^{Beach}, Santa Cruz Co., Calif.
1 adult (sex?) found DOR on San Andreas Rd.
mi. by road from Valencia Lagoon. A
large pond less than 1 mi. from DOR specimen. Country
is flat, farming & grazing land between hills & the sea.
About 1 mi. directly west is sea. Native vegetation to
the west is coastal sage & lupine formation. To the
east about 2 miles are oak covered hills. S & W
aspect of hills are grassy & open whereas N & some
E. facing slopes are covered c dense oak woods
(a. macrodactylum??) This flat country is
much like the tigrinum localities near Walnut
Creek in the Bay Area.

Aug 22. 1.5 mi. S E Ja Selva Beach, Santa Cruz Co., Calif.
Pond now completely dry. Dried up sometime
between 1- August & 22 August. Transforming
Hyla regilla & Rana aurora all over the
place. Thorough check made for Ambystoma
with no luck at all.



J. D. Anderson
1957

Journal

May 18

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Berkeley 1:30 PM (P.D.T.), arrived at
Rio del Mar 4 PM. Much to my dismay I found
several areas along Bonita Rd cleared &
marked off into lots. 1 area has a building
partly erected. One cleared area is ~~not~~
adjacent to parking area & close to spot
where most of my animals were marked.
There are indications that more is yet to
come. These spots were not ~~as~~ only cleared
but some burned as well. Adios Valencia!!
Drove down to the La Selva Beach area
and found pond dried up, searched willows
& edge of pond - no salamanders. Rain
beginning to let up slightly. Ate supper
about 5:45. Returned to Valencia at 6:30.
Rain just a misty drizzle. Ground very
moist puddles everywhere. Dry under larger
boards & logs.

G. O. Anderson
1957

Journal

Oct. 13

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Berkeley at 8:30 am with Det Wilhoft.
Arrived study area at 10:45 am. Rain's hard
upon arrival. Checked the "pond area" + willow
clumps for salamanders, found nothing. No
Hyla active either. Dead Eleocharis from last
year very wet, mostly fallen over - very thick.
Very wet at fringes of willow clump. Under
willows the litter was very wet but ground
under only slightly moist. Not hard however.
In pond area the soil has softened over its
usual summer state. Only largest cracks
remain + these begin to crumble. In many places,
especially near the cat-tail clumps soil is
very wet - water can be squeezed from it.
at far N end of "pond area" there is standing
water. Several distinct, elongate pools about
10 yds long + ~~about~~ 1 ft or less wide. This
averaged about 1" deep - up to 2" in one place.
Not sure why this should have water + no
place else, unless the creek brought it in.
At 12 noon took short walk up into oak
woods. Saw only 1 Batrachoseps. Still fairly
dry under larger logs + boards. Rotten logs,
however, are wet - can squeeze water from
them. Leaf litter wet but if it is thick the
ground is not very wet underneath. The upper
road, close to junction with Bonita Rd. has a road

Journal

Oct. 13

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
small stream cutting along its west side. Both Bonita
& Upper road have many large puddles - some
5-10 yds wide or more. Still raining hard. Turned
boards & litter - but no procrem. 1 pm. - ate
in cafe about 2 mi W of Valencia. Proprietor -
Bonny Neal - said it had been raining steadily
since mid-day on Thursday Oct 10. The
earlier rainstorm did not reach here with force -
only scattered showers - "not enough to stop
out door construction work". After lunch we
drove to "La Selva Beach" locality. No
standing water here at all. Roads very wet -
but it stopped raining at about 1:40 pm (PST)
Worked willow area here. Quite wet - but
as at Valencia, dry under most logs & boards.
As we left this place - partly chased by
several unruly cows & 1 nasty looking Bull,
we found 1 Ambystoma tigrinum on the
road immediately adjacent to pond. Sm. individual
about 55 mm SV. Killed last night - most likely.
Drove most of roads in this region, into Watson-
ville & back by way of Sunset Beach Park.
Hyla regilla singing in ponds here. Lot of
water in ponds. Must be checked for either or
both Ambystoma. Ponds between high bluff &
beach dunes - so salamanders may not use
it. Drove back to Valencia & went up to

J.D. Anderson
1957

Journal

Oct. 13

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
the ridge road (Loma Prieta??) which runs along
top of the hill. Turned logs + dug in litter but
again no Amblystoma. Finished this at 5 pm, then
ate supper + returned at 6. Dark but some light
still in sky. Worked Bonita Rd for salamanders
using Coleman lantern. No Amblystoma, but saw
8 Batrachoseps (2 gravid ♀♀, 2 small juv. +
4 ♂♂.) Walked upper road and found + marked
5 A. m. croceum (4 ♂♂, 1 ♀). Ground moist,
sky clear, no rain since 2 pm. Saw 3 sub-
adult Eusaturia. Finished here at 9 pm, intended
to drive to La Selva Bosch area but had
car trouble. Did not get going again until
~~to pm~~ after 10 pm. Since it had been long day &
~~the~~ Monday is work day we drove home. Left
Santa Cruz at 10:30, arrive home 12:20.

Note omitted.

~~11/20/57~~ Taricha granulosa DOR 1 mi
N. Soquel, Santa Cruz Co. 10 am. Raining hard.

J.D. Anderson
1957

Journal

Oct. 20 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Berkeley 9:15 am with Gillian & Bruce. Arrived
Rio del Mar at 11:30. Began work at once. Checked
all logs in willow clumps & at edge of lagoon
area. Nothing but isopods. There is still lots
of moisture here but no standing water this
week. Quite wet in leaf litter, dry at surface
usually. At 1 pm we drove to Sunset Beach
St. Paul for lunch. On way over I picked up
a lion's Eared gale. The bird ran swiftly but
apparently could not fly. I felt wings but
there was no break. Released the bird in a small
pond about 300 yards from sea (fresh H₂O pond).
Upon entering water it became active & alert.
Began drinking immediately. Swam well &
occasionally raised off water to beat wings.
In five minutes it began diving & beaching.
Checked this pond for salamanders. It is
about 50 yds long by 20-30 yds wide.
Eleocharis very thick. Made about 100
sweeps with dip net (at funiges) & got
only insects (Hemiptera - notonectids &
odonatan larvae). This pond must be checked
again when it rains. It stands between a
sage covered hillside & sandy dunes of the
beach. Hyla regilla seen & heard. Should
be an Ambystoma in this at some time.
Left here at 3 pm. Returned to Valencia

J. D. Anderson
1957

Journal

Oct. 20 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Lagoon and worked in the oak woods for a
little over an hour. Turned all likely looking
logs & stones. Still not very moist under there.
Also checked oak leaf litter in several places.
All negative. No salamanders of any
kind. Returned home at 7:30 pm after an
unsuccessful but pleasant day.

J.D. Anderson
1952

Journal

Nov. 18

Valencia Lagoon, La del Mar, Santa Cruz Co., Calif.
Left Albany Village at 12:30 pm + drove
via usual route to La del Mar, arriving there
about 2:30 pm. Very slight drizzle between 2:30
+ 3:30. Ground wet, showed signs of rainfall
of previous night and this morning. No sign of
pools in the pond area as yet. Spent most of
afternoon in reconnaissance. Set out shift fence
+ hardware cloth trap about 30 yds from
junction of Bonita Rd + Hill road. Set it in
thick oak woods. Hard to work in very thick
oak litter. At 4 pm I drove to 1.5 mi. S E
La Selva Beach locality. No standing water there
as yet, and since it was getting dark I decided
not to spend time here. ate supper at 5 +
returned to Valencia. Walked the road - Bonita
+ Hill Rd with Coleman lantern. Found 26
Ambystoma m. croceum. Call ♂♂, at last 1
moving toward pond area. Brought 2 back
for study, marked + released 17. 7 others
seen were not marked. Saw 5 Batrachoseps
+ 2 juv. Encyrtus on Road. Many snails,
slugs, earth worms + millipedes on the move.
Heard Hyla regilla singing in woods + saw 5
on road. At 11 pm took a slow drive to
La Selva Beach locality. Saw 1 Aneides + several
Hyla but nothing else. Left at 11:45 pm + returned
home at 1:45 am.

J. D. Anderson
1957

Journal

Dec. 5

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Albany 12:30 pm & arrived Rio del Mar 2:35.
It was raining in Bay Area but rain had stopped
in Santa Cruz. Sky overcast. Worked pond area &
oak woods, turning all logs. Saw only 1 Batrachoseps
and nothing else. 3:30 drove to La Selva Beach
locality & turned logs and again found nothing.
Drove down to pond at Sunset Beach state
park. This pond was flooded over the road. Sun
had set already so I decided not to work this
area now. Ate supper & returned to Valencia
at 5:45. On way in found one ♀ croceum
at side of Bonita Rd. - facing away from pond.
Not completely dark as yet. Walked the
road until 8:45 pm. 6 trips on Bonita Rd. &
one on hill road. No salamanders! Sky clear,
stars & moon out - quite light. At 9 pm I
drove to La Selva locality and again found
nothing. Returned home. The beasts certainly
need rain.

J.D. Anderson
1957

Journal

December 15 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left Albany at 11:15 am + drove via usual route
arriving Santa Cruz at 1:20 pm. Stopped to
work area just opposite Red Door Cafe - towards
the sea. Large area of oaks along course of
stream (). Some willows seen
so it seemed worth a check for Ambystoma.
The setting in oak woods is very much like
that at Rio del Mar. However there are no
real Ambystoma breeding spots. Stream is
narrow + moves pretty rapidly for the mile or
two I checked. Collected 3 Ensatina, saw 1
other plus 1 Aneides and many Batrachoseps.
Drove on to Valencia. Checked pond area between
2:30 and 3:45 pm. More water ~~on~~ standing
at north side of pond area - between the
two large willow stands. Walked west to
end of pond area and followed old stream
bed which runs W-E. About 50 yds from
westerly most end of pond area I found an
old culvert hidden in a Rubus thicket. It
had considerable water in it (pool of 8 ft
long + 3 ft wide. Water was pouring in to top
of culvert through an opening. Traced this
water to a spring at side of Bonita Rd where
it begins descent to lagoon level. Water was
pouring out rapidly. This is probably fed
by seepage from oak woods above. Probably

G.D. Anderson
1957

Journal.

Dec. 15 Valencia Lagoon, Rio del Mar, Santa Cruz Co.
only runs during rainy season - I have passed
this spot before + never noticed it. If blow
continues at this rate the pond should fill
soon. Especially if the stream at E end of
lagoon begins to flow. Hyla regilla were
sounding off all about - mostly in oak woods -
most I have heard so far this season. At
3:45 drove to La Selva locality to check water
situation there. Turned logs first but found
nothing but 1 Hyla regilla. There is standing
water in this area now. The portion of pond
opposite Willow clump - NE corner - is partly
flooded. Water up to 5" deep but rather
limited in area. 1 place 30-50 ft long + 8-10
feet wide + another spot slightly smaller
plus several smaller areas are flooded - represents
less than 1/8 total area of pond as I knew it
in 1956.

Ate supper at Red Door + returned to Valencia
at 5:30 pm. Sky very dark, thick rain
clouds everywhere but no rain. Saw 19
A. m. croceum, marked 14 + brought 5 back.
18 ♂♂ + 8 ♀♀ total! Saw 3 Ensatina, 3 Batrachoseps
+ 6 Hyla. Hyla were calling all over - mostly
in woods. Worked here until 10:35. Made check on
San Andreas Rd. with no luck. Left for home
at 11:55 pm. On way I decided to check

J. D. Anderson
1957

Journal

- Dec. 15 Valencia Lagoon, Rio del Mar, Santa Cruz Co.
Stanford campus for Ambystoma tigrinum.
Drove around head of La Jolla Lagoon but
saw no sign of salamanders. Many dead
Hyla regilla + several living ones on road.
Saw one Taricha torosa on Palo Alto
side of campus (away from La Jolla).
Got home about 2:30 am.
- Dec 19. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Albany at 11:30 am + arrived in Santa Cruz at
1:30 pm. Stopped just south of city of Santa Cruz
along the highway. There is a stream which runs
under road, on west side of road it is overflowed. Willows
grow here - might be a spot for Ambystoma.
Found nothing but this spot should be checked
again. Continued on to Valencia. In spite of recent
rain there is still only a little water here - same
as described earlier. Worked around willows +
edge of pond area for an hour then drove to
check La Selva Beach area. Slightly more
water here. Drove over to see J. Edwards, owner
of La Selva area. Got his permission to work pond +
a warning about nasty cattle. Mrs. Edwards mentioned
seeing aquatic salamanders in spring behind their home.
Checked it out - negative. She said she would save them
for me if she found any. Went back to La Selva + used
dip net in water - no luck. Set out 3 traps - funnel
type - at 4:15 pm. ate supper 4:30-5:15. returned to

J. D. Anderson
1957

Journal

Dec 19

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
V.L. at 5:30. Sky clearing - no rain. Checked roads
between 5:40 + 8:45. No luck at all. Made 4 round
trips to spring, 2 to garage + 1 on hill road. Saw only
1 Batrachoseps + 3 Hyla. However Hyla were calling
until 7:30 pm. Sky became very clear. Stars out -
etc. Temp. $\frac{1}{4}$ " above Rd at 7 pm 6.5°C , at 8 pm.
 5.9°C . Soil temp. 6.0°C . Temp 3 ft above rd. 6.0°C .
Left at 9 pm + went over to La Selva. Found
2 ♂ A. m. croceum in trap #1. Nothing in other
traps. Had been working here 15 min. when I was
chased out by 3 large Anger bulls.

Water here is much as described in Journal
for Dec. 15. Slightly more extensive + a little
deeper - deepest spot 7" + not 5".

Left at 9:30 + arrived home 11:30 pm

Ambystoma macrodactylum

Jan 24.

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

1 gravid ♀ under log 5 yds from large fallen willow.
Cl. temp 9.2°C , temp under log 7.2°C , air temp 7.8°C .
Abdomen swollen, cloacal lips slightly swollen. Tail fin
well developed. When handled it exuded sticky white
substance along lateral aspect of basal portion of tail.
Very moist under log & quite moist under willow leaf
litter in this area. Pattern of small spots, very broken.
no color on head. Marked RF 3, RH 1.

After dark entire area (roads, woods, willow clumps)
was thoroughly searched but no Ambystoma seen.
Did not rain all day & was clear throughout
the night.

Jan 24.

La Selva Beach, Santa Cruz Co., Calif.

1 ad. ♂ collected under an old railroad tie. Cloacal
temp. 9.2°C , soil temp under board 7.4°C , Air temp
 $1/4$ " above soil next to board 7.6°C . Salamander
found in a clump of willows 25 ft from a small
temporary pond which was still dry. Search of
the area produced only H. regilla, no further
Ambystoma.

Jan. 25 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Began raining about 9 am and continued until
5:30 pm (PST). Bonita Rd. abutting the S end
of the lagoon & parallel to the oak woods was
searched from 5:30 pm until 9:15 pm. Rain
began again at 6 and persisted until 9:00 pm.

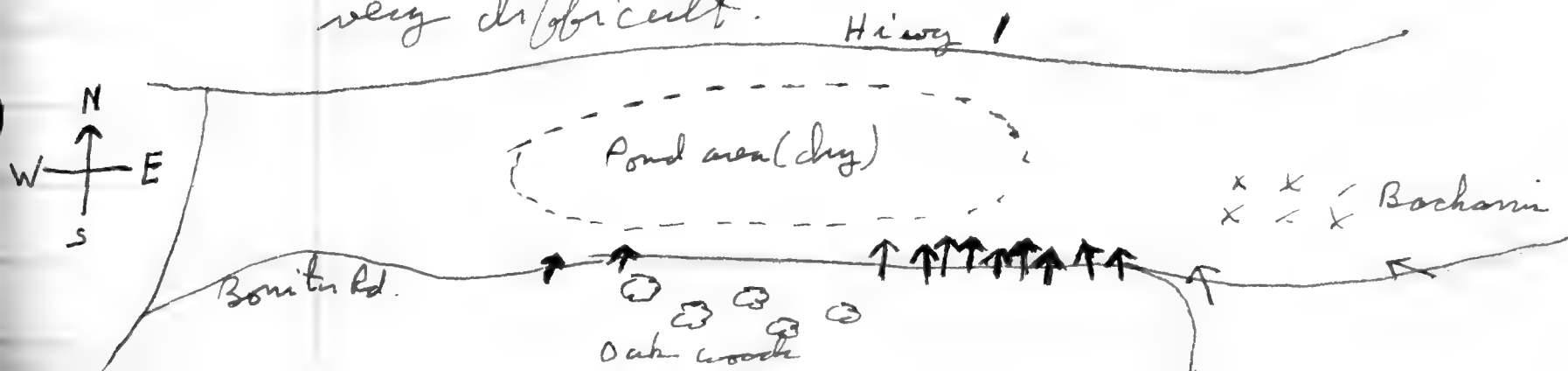
J.D. Anderson
1957

Ambystoma macrodactylum

Jan. 25 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

During this time adult macrodactylum moved down from the woods towards the pond area. 10 females and 3 males were marked and released. All were moving towards the pond area (even though there is yet no water present.).

All ♀♀ were gravid, eggs being seen through the abdominal wall. ♂♂ had greatly swollen vents. Both ♀♀ + ♂♂ had enlarged tail fins but this was most pronounced in ♂♂. Dorsal portion of tail was greatly heightened + in most cases fin tissue extended beyond normal tip of the tail. Cloacal temperatures of 6.8, 6.4 + 7.2 were recorded, surface of road recorded at 6.8 + 6.4 and air temp (1/4 ~~above~~ above surface) 6.2 + 6.0°C. 1 juv. salamander was found moving in the opposite direction (from pond toward sub woods). All salamanders secreted a viscous, white liquid when handled. This exuded mostly from sides of tail particularly the basal half, although some appeared along ~~dorso~~ lateral aspect of the posterior trunk region. Extremely sticky + made handling the salamanders very difficult.



J.D. Anderson
1957

Ambystoma macrodactylum

Jan 25

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Sketch on bottom of preceding page - arrows indicate location of ad. salamanders + direction of movement.

Large clump at E end of pond area may be correlated with the many rivulets which flow down from woods at this point. One ♀ was found crawling down in such a rivulet. When released she turned back towards woods but when she got back in rivulet she followed it towards the pond area. Could be that salamanders use water flow to find breeding areas.

Feb. 22.

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

1 gravid ad. ♀ found at 2 pm. under a board 5 yds from Salamander Road. yds from junction with Bonita. Board elevated 1" from substrate. Wet under board. Temp. under board 12.4°C . Air temp at top of board 12.6°C . Marked ♀ LF-2; LH 5. Returned ♀ to original position. At 3:30 pm rechecked + she was in same place.

1 gravid ad. ♀ found under ~~board~~ board just E. of Ivan Green House at 3 pm. Body temp. 13.2°C . Temp under board (in letter) 12.6°C . Marked ♀ LF-3; LH-1. Hyla regilla ♂ + Ensatina ♂ found under same board.

Between 6:45 pm + 8:40 pm, 15 Ambystoma found by walking Bonita Rd with Coleman Jantzen. Three marked + released. 12 ♂♂, 3 ♀♀. All facing pond, coming from woods. Returned to Valencia.

J.D. Anderson
1957

Ambystoma macrodactylum

Feb. 22 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
at 11 pm. Found 5 ♀♀ on Bonita between
jet and Green House. 2 of these were kept for
study. 2 were marked & released. 1 was #100
(LFS; LHS) ♀ who was marked & released at
2 pm today. It was crossing the road 25
yards West of junction with "Salamander" road.
It had thus traveled

Feb. 22. 1.5 mi SE. La Selva Beach, Santa Cruz Co., Calif.
Checked edges of pond area, willows, wood
piles etc but found no salamanders. There are
now several ditch like areas which have
4-5" of water in them. Other scattered areas have
1-2" water. Less than 1/5 of total pond area
is water. Left at 3:30 pm returned at 9 pm.
Collected 3 ♂♂ from largest flooded area.
These were all in 2-3" of water and found by
use of Coleman lantern. 3 others (♂♂) were seen
but these escaped. No ♀♀ seen. Water temp 2"
below surface 12.0°C. Air temp. 10.5°C, a
very strong wind blowing from the West.
Rained all day & all night.

G. D. Anderson
1957

Amblystoma macrodactylum

March 10. MVZ.

Eggs of A. m. croceum collected on March 9 all in blastula at 7 pm. Kept in 2 large (4") finger bowls at room temp.

March 12 (3 pm) neurula 19.5°C

March 13 (4 pm) late neurula - early tail bud 19.0°C.


March 15 (5 pm) - late tail bud 19.4°C

March 17 (4 pm) - gills, tail deadened 19.5°C

March 19 (8 pm) - 1st circulation in gills, balancer well deadened, gills unbranched, melanophores scattered, foot limb swelling.

March 21, hatching. 10 am. 19.2°C

at hatching. 7 mm total length, eyes & mouth closed. No ventral melanophores, few on gills. Yolk present. Melanophores concentrated on tail (especially tip), posterior part of neck (dorsal), scattered on lateral surfaces.

Limb bud a ~~to~~ rounded protrusion


Balancer long, no melanophores. Gills simple with only 1 or two buds to indicate future branches.

J. D. Cunderson
1957

Cimicostoma macrodactylum coccum

Oct. 13

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

5 adults marked on the upper road thru the oak woods.

1st at 7 pm (PST) #119 ♀, cl. temp. 15.2°C , temp. $1/2$ "

above surface 14.8°C . Facing down hill direction, or

though it had come down from hillside to N. But

actually facing N. E. while pond is N. W.

All others but #123 facing same approx. direction.

#123 facing exactly opposite.

7:30 pm (PST), #120 ♂, cl. temp. 15.0°C , temp $1/4$ "

above surface 14.8°C , soil 14.6°C .

7:40 pm (PST), #121 ♂ - no temp. data

7:50 pm (PST), #122 ♂, cl. temp. 15.2°C , temp

$1/4$ " 15.0°C , soil 15.0°C .

8:15 pm (PST), #123 ♂, cl. temp 14.4°C , temp $1/4$ " 14.0 ,

soil 14.4°C .

♀ had well rounded, but not distended abdomen. ♂♂ all had swollen vents. Only #123 had vent so swollen as to be considered prime condition. Others well swollen but not quite prime.

J. D. Anderson
1957

Amblystoma macrodactylum croceum

Nov. 18 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

26 adult ♂♂ seen between 6 pm and 10:45 pm on or near the sandy road skirting the south edge of Valencia Lagoon. All ~~way~~, but 1, were facing towards the pond area. The one exception was facing west, parallel to the pond area. All had well developed tail fins & enlarged cloacal sacs. It had rained during the night of 17th & this morning. Showered between 2:30 & 3:30 pm and again between 7:15 and 8:15. There light but continuous showers. Ground & duff quite moist - but ~~not~~ ^{no} runoff. 2 ♂♂ brought back for study, 7 others observed but not marked. Remaining 17 marked & released. Temp. data recorded below (numbers refer to marking catalog).

#	cl. temp.	temp 1/4"
124	12.8°C	12.0°C
125	—	12.4°C
126	12.0	11.8
127	12.2	—
128	12.0	11.8
129		12.8
131	11.8	11.6
154	11.8	11.8
158	12.0	12.0
159	12.0	11.8
161	11.6	11.6

J. D. Anderson
1957

Ambystoma macrodactylum

Nov. 18. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Temp data continued

#	cl. temp	$4\frac{1}{4}$ "
not marked	12.0	—
collected	12.6	13.2

Also seen as I walked the road: 5 Batrachoseps, 2 juv. Eusatria, many snails, many slugs, 4 millipedes, many Daddy-Long legs, many earthworms & 5 Hyla regilla. Many Hyla heard singing in oak woods but only 5 seen.

Almost all ♂♂ toads showed a definite defense reaction. When first bothered they usually snapped body to a C shape. Some would attempt to run - which they can do well in short, wild bursts. Those which assumed C shape, slowly wove tail (actually wove passed along tail). White, sticky secretions poured out along lateral surfaces of tail. This frequently brought into contact with hand. This secretion is as thick as on Eusatria but is restricted, here, to sides of tail. Unable to get stuff off hands for 12-24 hours.

all these ♂♂ I consider to be just approaching aquatic stage (for reproduction). They provided no other power. And when put in puddle left it immediately.

Amphystoma m. croceum

Dec. 5 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
1 ad. ♂ marked + released 106 yds W. I G. house. Cl.
temp. 14.0°C . Time 5:45 pm. Slightly cloudy
sky at dusk. Had rained in morning - none
since 10 am. Road wet.

About $\frac{1}{2}$ hour later sky cleared, stars +
moon showing. 3 hrs. of road check drew
complete blanks.

Dec. 15 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
14 ad. marked + 5 taken for study. 8 ♂♂ +
6 ♀♀. All in fine breeding condition. No rain
since early morning but one slight (10 min) + light
shower at 9 pm + one heavy (10 min) shower at
10 pm. Walked road $4 + \frac{1}{4}$ hrs. 6 round trips
to spring, 2 to Cedar house + 1 on hill road.
Sky overcast, cloudy, very dark night. Not
much wetter than Dec. 5. Difference must
lie in sky condition.

Dec. 19 1.5 mi. S. E. La Selva Beach, Santa Cruz Co., Calif.
2 ad. ♂ taken in funnel trap in 4" of water. Trap
set out at 4:30 pm, found A. m. croceum at 9:05
pm. Cl. temp 9.0 for both, water temp. 4" 9.0°C .
Temp air $\frac{1}{4}$ " above water 6.0°C . Both ♂♂ in
excellent breeding condition + were brought back
for study. Interesting that they were in water
already + I haven't been able to find them
under logs etc.

J. D. Anderson
1958

Journal

Jan 9

Valencia lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left MVZ at 7:30 am with Dan Wilhoft. Drove
via usual route. Arrived Rio del Mar at 10:00 am.
Began working in oak woods. Found a fairly recent
pit (dug for cess pool) near new home being
erected. This pit (*Macrodactylum* species account-
ing for this date) seemed an
efficient amphibian trap. 9 *Ambystoma*, 5
Ensatina + 30 *Hyla regilla* were found in it. In
addition, there were 3 badly decomposed mice
almost surely *Peromyscus* (+ probably *harrisi*).
We studied this trap for most of the morning.
Made a thorough check of the same area + found
just 1 *Ambystoma* under a large flat stone. Still
no water in pond or. I'm beginning to worry
again.

After lunch we drove over to La Selva area +
checked the *Ambystoma* pond. Found fair
number of fresh *Macrodactylum* eggs but
found no adults at all. Left here about 3 pm,
drove to Edwards ranch to ask permission for
night work in his area. Mrs. Edwards had a
nice ~~subadult~~ *Taricha granulosa* for us. She
got it in her back yard. This is closest yet
to the *Ambystoma* areas. We worked small
stream near the Edwards place till 4:30 pm.
Then ate supper + returned to Valencia at dark.
5:30 pm. Some clouds in sky during latter

J. D. Anderson
1958

Journal

Jan 9

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
part of day. Sky overcast, humidity (sting bug),
temp about 12°C . Walked road in usual
fashion, looking for croceum. Made three round
trips to spring & garage. No salamanders.
7 pm drove back to La Selva area. Checked
in water for adults - no luck. At 7:05 it
began to rain heavily. Decided to try road
driving - for Taricha over near the Edwards
place. 1 run with no luck. 7:30 pm we
drove back past La Selva pond. Got a
large ♀ tigrinum nearby. In next 35 min. we
picked up 2 more large ♀ tigrinum + 1 DOK ♀.
My suspicion confirmed at last.

Left for home at 9 pm. Arrived home 11:30 pm.

Jan 23

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left Berkeley at 5:30 pm in heavy rain. Rained
all the way to Santa Cruz. Arrived Rio del Mar at
8 pm. Decided to try driving the Ellicott Rd
for A. tigrinum during the heavy rain. Made
3 complete trips along length of the road but
found nothing of interest. 9:15 pm took traps
& net into Ellicott pond which is rapidly filling.
Set out 11 traps. Tried to check around for
croceum activity but driving rain made it
difficult to see into water. Saw large ♀ tigrinum
in 6" of water at 10:10. She got away at 10:15 pm. Saw
& collected a large ♂ in 4" of water. Very easily

J. D. Anderson
1958

Journal

Jan. ²³ ~~24~~

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
taken. Tigrinum stand out strikingly in water.
10:30 pm. made a road check along San Andreas
Rd. Picked up 3 Tigrinum in 25 min. Returned
to Valencia Lagoon & began a Bonita Rd. check
at 11:15. Got 3 ♀ A. m. croceum between 11:45 &
1:15 am. ~~1:15 am.~~ Went to sleep at 2 am. After

Jan 24.

Breakfast next morning I checked the pit at
Valencia, found 3 ad ♂♂ & 1 ad ♀ all in prime
breeding condition. These, like last mites croceum
were marked & released. Checked a little in oak
woods but found nothing else. Worked about
pond area for a while. It is filling rapidly.
Water is flowing in a wide, shallow but slow
moving stream from the SE



• willow ↓ stream flow ←
extent of pond

J. D. Anderson
1957

Journal

Jan 24. Valencia Lagoon, Rio del Mar, Santa Cruz Co, Calif.
Water was also draining in from the N shore. It
came thru a culvert under highway & entered
pond area after main stream. Water moving
in pond very turbulent & muddy. Appears to
be the real thing this year. Found no
salamanders. At 10:00 I returned to "Elliot's"
pond. Got 2 A. tigrinum & 9 A. m. croceum
in traps. All ad ♂♂ in prime breeding condition.
1 croceum escaped. Worked around here
until 12 noon. Couldn't do much in driving
rain. Returned to Valencia for an hour. Quite
impossible to work so I had lunch & chided
~~myself for not getting the work on captured~~
~~animals.~~
off for a bit. Returned to Elliot's pond to check
traps. Nothing this time. So at 2 pm. I left
for home.

Feb. 9 Valencia Lagoon, Rio del Mar Santa Cruz Co., Calif
Left MVZ at 7 am & arrived Valencia at 9 am. Pond
is full up. Water still flowing in & pond is now
draining out ~~W~~ end into Valencia creek. Highway
dept. has diverted in flow slightly to keep water
off road. Only effect on lagoon is that water enters
pond several yards to the N. Water is extremely
muddy, impossible to see anything in water - even
at shallow west end. Worked all around edges
in attempt to locate eggs but had no luck. Eggs

G. D. Anderson
1958

Journal

Feb. 9. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
may well be there but I couldn't see them with all
the silt in the water. Finished this check about 10:30 am.
Sky overcast yet. Worked oak woods for about 1 hour
but found nothing. Got 1 ♀ A. m. croceum in the
pit (described in notes of Jan. 9). Looks like a spent ♀.
May indicate breeding - dissection will tell. Drove over
to Ellicott pond at 11:30 am. Sun out now, sky partly
cloudy. Water much clearer here. Pond at maximum
size - about same as on Jan 24. Found Ambystoma
eggs abundant along shallow edges. Hyla regilla
eggs everywhere. Checked logs in Willow stand but
saw nothing but Hyla. Collected about 65 eggs in
late neural fold - neural stages. Saw no eggs
which looked like A. tigrinum. These maybe
in deeper water or hidden. Ate lunch at 12:30 & returned
to Valencia at 1:15. Spent afternoon taking notes on
pond & buying large tin cans for traps. Ate at
4:30 & returned to Valencia for evening road check.
5:30 pm Hyla regilla chorus began - just before
sunset.

1st road check - 6 - 6:15 pm. - Car to last oak to garage.

13 Hyla regilla - Trap # 2 - 1 Hyla

2nd road check - 6:20 - 7 pm.

3. A. m. croceum, 1 Hyla, 1 Batrachoseps - Traps = 0.
3rd check - 7:05 - 7:40

1 A. m. croceum; Trap # 1 - 1 croceum.

J. D. Anderson
1958

Journal

Feb. 9 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

4th check - 8 - 8:20 pm.

1 A.m. croceum - no trap check.

5th check. - 8:20 - 8:45

Nothing - checked water traps - 2 dead Hyla.

6th check. - 8:50 - 9:15.

Nothing -

Humidity data

98%

5:30 pm - Sling Psychrometer - 13.0°C - 55°F.

97%

7:30 -

13°C - 56°F.

Humidity paper - 5:30 - 7:45. - 16.5°C.

#1 - At side Bonita Rd. -

#2 - In woods (near trap.) -

Weather - no rain - but overcast & threatening.

1-10 mi shower at 4:30 pm - not wetting at all.

Left Valencia at 9:35 & drove home.

Feb. 16

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

Left MDC at 7:30 am. Began work at Valencia about 10 am. Checked can traps. - #1 had 3" of water in it. No Amphib in #1 - just one drowned juv. ♀

Nestora fuscipes. #2 can was forced out of its hole by seepage of water. 1 ad. ♂ croceum (#166 may) was in can along with numerous beetles (Carabids) & earthworm. Worked pond next for eggs with little luck. Got about 6 eggs (see sp. accounts). The water is still very muddy & it is difficult to

J. D. Anderson
1958

Journal

Feb. 16 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

98 ♂ } ocha ♀
25 ♀ } mis. marked.
all released.

see any distance into it. Eleocharis is ~~beginning~~
coming up in all shallow areas but especially at west
end of pond. Hyla regilla eggs everywhere. Worked
until 12:30 at this then stopped for lunch. Went
around pond again carefully until 2:45 pm. Checked
pit & found 3 ad. croceum (2 ♀♀ + 1 ♂.) ♀♀ appear
spent - no eggs visible - bellies flat. Drove over
to Ellicott pond & worked it until 4:30. Got
only 1 egg. Hyla eggs everywhere. Tadpoles swimming
about. Saw many very recently hatched Ambystoma
eggs - both tigrinum + croceum. Met Mr. Edwards
& he asked for my address. They will clear up some
wood piles around barn several hundred (200 yds)
behind Ellicott pond. Gave him a gallon jar to
keep any salamanders he gets. He is being very
helpful. Ate supper between 4:45 + 5:30. Drove at
Valencia at 5:40. Hyla chorus began at 6 pm - barely
dusk. Made 3 road checks but got no
Ambystoma. Sky clear & starry. Has been a
warm & clear day. Hyla were moving in same
pattern observed before - Heavy movements at
dusk tapering off to nothing within an hour.

Humidity data - Slen's Psychrometer.

6:15 pm - 12°C - 54°F - 98% RH

7:30 pm - 11°C - 53°F - 97% RH

Left for home at 8 pm. Heavy traffic - home
at 11 pm.

J.D. Anderson
1958

Journal

March 3 Valencia Lagoon & Elliott, Santa Cruz Co., Calif
Left Albany 7 am & drove to Valencia Lagoon. Worked
SW & W end of pond with dip net all morning.
Got no larvae at all but found several
eggs of A. m. croceum. These were just
hatching; one larva escaping from jelly as
I handled egg. Probably explains why I got
no larvae. Hatching are tiny & very hard
to net. After lunch I worked the Elliott pond
& got 10 larvae - between 20 - 35 mm. Total
lengths - see species account. In ~~for~~ both
ponds invertebrates are "blooming" in fantastic
numbers. Ostracods make water almost soupy.
Fairy shrimp - Eubranchopus abundant at
Valencia. Snails & small clam (Pisidium?)
also abundant. Hyla tadpoles in great
numbers also. At Valencia the Ebochani
is coming up fast at margins of pond. Water
still muddy most places but clearing at
shallow edges.

Water temp at edge of Valencia - 12.0°C at
11 am. Time & site of eggs.

Worked oak woods turning logs until 4:30 pm. Then
took family to supper & home.

J. D. Anderson
1958

Journal

March 18. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Albany 7:30 am. Stopped at Natural Bridges State Park (in Santa Cruz) to have a look at several ponds N. of the city proper. Spoke to Mr. Stanley, a ranger. He does not recollect seeing salamanders in his two years at Nat'l Bridges. The pond in park is small ($\frac{1}{2}$ Valencia at most) & is temporary. Red Gum Eucalyptus on hill sides all around, Willows at pond level & along stream inlets & outlets. Saw several Hyla tadpoles but little else in 30 minutes work with dip net. Yet it is still a good possibility & I will keep track of it. Another larger pond $\frac{1}{2}$ mi. E of Park is permanent. It is deep & steep sided - may have some Ambystoma but somehow it doesn't look right to me. Drove from here down to Valencia. Ate lunch & then began search for larvae at 12:30 pm. Worked upper end of pond all afternoon - 12:30 - 4 pm. Got only 4 larvae (3 + 1 egg). The larvae are small of 10-15 mm, the egg ready to hatch. It may be that the young larvae stay in thick growths of Eleocharis until reaching decent size. Set out 12 traps for larvae at 4 pm. Checked at dusk 6-6:30 pm. No luck on Ambystoma - Got 12 Hyla tadpoles.
Began Road checks at 7 pm (P.S.T.). Air temp 10°C
R. Humidity 88% (9-50) - sling Psychrometer.

J.D. Anderson
1958

Journal

March 18 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
First check to oak & back 7:00 - 7:15 pm (PST)
No Ambystoma, 17 Hyla. Sky dark, very clear,
stars bright - no moon. Checked Hill road to
above end of Lagoon Area - 1 Hyla, 0 Ambystoma
7:15 - 7:40. 2nd check 7:40 - 8 pm (PST);
0 Ambystoma, 7 Hyla. 3rd check 8:05 -
8:25 - 0 Ambystoma, 5 Hyla. Hyla chorus
in lagoon began at 6:30 pm & is much stronger
now - probably reinforced by newcomers.
Several Hyla moving away from pond area
appear to be spent females. Lost 2 checks
& saw first snail - total of 7 - all seem to
be Helminthoglypta. Saw only 2 millipede all
evening.

9 pm - air temp 3 ft 6.8°C , $1/4"$ - 6.0°C
soil temp - 9.0°C .

Omitted - 11:30 am I checked the large tin
can buried in oak woods. It has about $2\frac{1}{2}"$
water in it from recent rainfall. 1 dead
~~Sorex~~ Sorex townsendi on bottom. Must have
killed in during or just after the rains
of the last weekend March 15 & 16. Still in good
condition - no perceptible odor. Picked it
in 10% formalin.

March 19 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Woke up at 5 am - Hyla chorus still going
strong, began to taper off about 6 (dawn).

J. D. Anderson
1958

Journal

March 19 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Checked water traps at 8 am. No Ambystoma - about 15 Hyla tadpoles + assorted invertebrates. Drove over to Ellicott Creek. Pond slightly larger + ~~more~~ much clearer than Valencia. Went over to check with Mr. Edwards + get permission to work the area. He gave me 1 Aneides lugubris + spoke of "water dogs" in a fish pond on his property. Checked this pond - got 1 adult ♂ Taricha granulosa. Pond is fed by a spring + is permanent. Roughly circular + 2-5 yds in diameter. Watercress abundant all along edge. After this Mr. Edwards accompanied me over to Ellicott Pond. He remembered seeing a black + yellow salamander under a woodpile just S E of pond among the willows. He + I moved (log by log) several large woodpiles. Found 2 ad. A. m. croceum under logs at bottom of woodpile (see sp. accounts). Worked at this until 2 pm. Mr. Edwards is very sympathetic to my work + has been very helpful. He tells of ploughing up Ambystoma tigrinum on the ridge just E. of Ellicott Pond. He describes them as very large, black with whitish round spots along the sides. Ate lunch at 2 + then began dip netting for larvae in Ellicott Pond. Got 17 larvae in 2 hours. Apparently both

J. L. Anderson
1958

Journal

March 19 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
croceum + tigrinum. All larvae taken in water
from 10-21" deep + where there are growing
shoots of Elodea. At 4:30 pm I drove
back to Valencia to check + take in the
water traps. No Ambystoma again!! They
are so small that they are not yet actively
wandering about (in my opinion). Left Valencia
at 5:15 pm. Ate supper at Red Door +
drove home.

March 21 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Heavy rain last night (March 20) + heavy shower
21st in Bay Area so I left for Valencia 3 pm.
Arrived at lagoon 6 pm after stop for supper.
Hyla chorus just getting underway. Rain light
but steady now. Made 1 road check at dusk -
sky still light. 6:25-6:30 saw nothing at
all. Next check, 6:45-7:05 sky almost dark,
rain letting up. Saw 34 Hyla + 00 Ambystoma.
~~Check~~ Check tabulated below.

1st	6:15-6:30	Bonita	Nothing	still light
2nd	6:45-7:05	"	34 <u>Hyla</u>	sky st. light
3rd	7:05-7:20	"	16 <u>Hyla</u>	sky dark
4th	7:20-7:50	Hill	Nothing	dark
5th	8-8:15	Bonita	1 ♀ <u>A.m.c.</u> , 5 <u>Hyla</u> .	
6th	8:35-8:50	"	7 <u>Hyla</u>	
7th	8:55-9:20	Hill	Nothing	
8th	9:20-9:40	Bonita	4 <u>Hyla</u> , 1 juv. <u>Ensatina</u>	

Rain stops →

Rain →

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1958.

Journal

March 21 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

9th - 9:45-10 - In woods - 1 ♀ Eusatria

10th 10:10-10:25 - Bonta 4 Hyla.

Rain light until 7:15, then stops until 9:15. Rained heavily until 9:50, then stopped. Sky began to clear. Could see stars. Since nothing much doing I left at about 10:35. Interesting that the one Cembrystoma was a gravid ♀ facing the pond. No others moving. I suspect that she is about the last straggler. Most other ♂♂ & ♀♀ have bred & left the pond already. Spent approx. 30 min. prowling in woods with lantern. Saw only 1 gravid ♀ Eusatria. Should try this again using a good strong head lamp.

Heard ♂ Horned owls talking tonight for first time this spring.

April 11

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Left Albany 7:30 am. Planning to stay over at Rio del Mar if floods haven't caused too much damage. Arrived Valencia at 10 am. Turned into Bonta Rd. & sunk down several feet into a mud slide just a few yards off the paved road. Worked for half an hour but couldn't get out. Finally pulled out by Water Co. truck. Drove around to E. entrance but couldn't get to for that way either. Run off has cut deep gullies in the

J. D. Anderson
1958

Journal

April 11 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
road. Several large puddles (ponds?) with
10-12" of silt on bottom blocks the way also.
Several trees across Rd. didn't help either. Finally
left car on solid section of road & walked with
nets etc. to pond for work. Pond is not greatly
enlarged after heavy rains. W end is more extensive.
Booby area flooded - but shallow. Worked
along S edge - some spot where early notes or
eggs were recorded. Caught 16. Croceum
larvae in 1 1/2 hours dip netting - working
from small willow to SW most corner of
pond (see sp. account A.m. croceum). Ate
lunch at 12:45.

This time includes measuring each larva, recording
2 water temps & writing notes on habitat.

Drove over to the Edwards ranch to see if they
had any salamanders for me & get permission to
collect at Ellicott Pond. They had been away
& had no critters for me. Worked Ellicott
pond at NW edge for about 1-2 hours. Got
both tigrinum & A.m. croceum larvae for
food study, collecting samples of food items at
same time. Then worked a small, temporary
pond - flooded field along San Andres Rd.
about 1/2 mile towards Laguna Beach from
Ellicott Pond. Got 2 larvae - apparently
tigrinum. Croceum may use this too but

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1958

Journal

April 11. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
it is a very ephemeral thing & may not give
them enough time. Lots of Hyla tadpoles in
it. At 4:30 pm I drove back to Valencia to
get some soil for experiments at school. Decided
not to stay over since water is high & muddy -
bad enough to hinder easy trapping. Whole
area is so wet that there is no place close
by to camp - so left for home about
6 pm.

April 26. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Albany 7:20 am. Arrived Valencia at 9:30 am.
Checked fringe of oak woods, drying out very
rapidly. Searched pond for larvae between 10:15
am and 12:15 am. Netted 15 which were measured
and released. Distribution has shifted slightly due
to a slight lowering of water level and extensive
growth & spread of Eleocharis. Just before
entering pond at 10:15 I saw a Thamnophis
18 yds from edge in some bushes but was unable
to catch it. Saw another cruising thru Eleocharis
& was not able to get it either. On way back to
car at 12:15 I found a freshly killed Thamnophis
on Bonita Rd. Was not there at 10:15. Preserved
this snake. Ate lunch between 12:30 & 1:00 pm. Set
out 12 funnel traps for larvae between 1-1:30 pm.
Drove over to Ellicott Pond & began collecting
tigrinum & croceum larvae for food study.

J. D. Anderson
1958

Journal

April 26 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Had much more trouble than usual getting samples.
Perhaps because I was using smaller dip net. Took
3 hrs. to get 5 tigrinum + 4 croceum. The tigrinum
are really big now. Drove back to Valencia
to check traps at 5:30. No salamanders. Checked
traps again at 9:30 + got 1 larval A. m. croceum.

April 27 Slept in car. Up at 6. Checked traps at 6:30
and found an additional croceum larva. ~~to~~
Worked oak woods looking for adults with no
success. Then drove towards Watsonville
along both roads hoping to find a new
locality or find Taricha localities. Drove
blanks on both. Returned to Valencia at
1:30 to check + pick up traps, got another
larva. to the traps do work. Left for home
about 1:45 - arrived Albany ca 4:00 pm.

May 11 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left Albany 7:45 am, arrived Valencia 9:45 am.
The pond has not shrunk much in extent but has
decreased slightly in depth all over. Vegetation
is expanding in pond area. At W end of pond
Eleocharis forms almost solid stand in shallow
water. ~~Potamogeton~~ is in full leaf + extensive.
Worked with dip net for 2 1/4 hrs, 10:15 - 12:15
+ got only 4 larvae. These taken from same
area sampled previously. Worked entire W half
of pond + got only these 4. Most trouble I've

J.D. Anderson
1958

Journal

May 11

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
ever had. Possible factors ① more extensive
Elaecharis, providing cover & impeding dip net; ②
breeding water - makes more shallow areas available,
thus spreading larvae; ③ Overcast day. I think
1 + 2 are responsible - esp. ①. Conchostraca
still very abundant. Ate lunch 12:30 - 1:30. Drove
to Elliott pond. Worked NW corner pond & got
5 tigrinum + 2 croceum larvae in 18-24" water.
These in extensive stands of Elaecharis - not
thick clumps but where it covers wide areas
with swimming space. Got there in 1 hour. Took
food samples also. Then worked SW corner near
wood willow stand. Got 3 croceum + 4 tigrinum
larvae in shallow water here (depths 4-7"). Larvae
more abundant than anywhere I else. Took there
7 in 20 minutes of dip netting. Tadpoles very
abundant. 1 large Belaetona, a possible
predator taken here also. Both medium & large
tigrinum taken. Collected water sample for
pH determination, also took tadpoles & other
animals for breeding corstine larvae. Drove
back to Valencia & got water sample there.
Left for home at 6 pm. Ran into heavy
Sunday Traffic in Santa Cruz Mtns. Took 2 3/4 hrs.
note - Bonaparte Gulls breeding on tadpoles in
Elliott pond.

H. D. Anderson
1958

Journal

May 17

Valencia Lagoon + other localities, Santa Cruz Co., Calif.
Left Albany at 8 am. Arrived Valencia 10:15 am.
Began larval survey at 11 am. Worked with dip net
from East end of pond working mostly along side.
Got some larvae in central area of pond near the
large stands of cattail. Measurements (Total length)
of 12: 68, 61, 80, 73, 81, 81, 20, 65, 58, 56, 61, 51
 $\bar{x} = 67.08$ (51-81). Pond level has dropped considerably.
Water still extensive but overall depth is not as
great. Entire SW end is shallower - nowhere over
2 ft. Deepest area is clear area just in front of
central willow stand. Larvae are exceedingly
difficult to catch. Previously they could be taken
at margins where water was shallowest. Best
margins are now too shallow & larvae have
greater shallow area to choose from. Larvae
taken in 12-15" of water under surface mat formed by
floating leaves of Potamogeton. Finished
survey at 1 pm. Ate lunch then set out funnel
traps (12) in grid within this same Potamogeton
area - finished at 2 pm. Drove over to Ellicott
Pond to collect larvae for food study. Worked
fringe along willow clumps & N end near
strawberry patches between 2 - 4 pm. Got 5 croceum
& 6 tigrinum, all in fairly shallow water. Next
drove down to Sunset Beach State Park to
check on pond there. Lots of people about.
Pond still deep & shallow areas thick with

J. D. Anderson
1958

Journal

- May 17 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
plants. Would be too difficult to work so I
didn't waste the time. Back to Valencia to
check traps at 5 pm. No salamanders. After
supper I worked Valencia area again. Checked
traps at 8 pm (dusk) - again no salamanders.
Early to bed. Up at 5:30 am. Checked traps
May 18 at 6:00 am (dawn) - no salamanders. Then took
off for a check of several ponds in the region
south + east of here. 1st stop at Aromas,
Monterey Co. Last year (1956) got I. granulosa
here but was unable to connect today.
Then drove south of Watsonville to check on
pond along Elkhorn Road. Big thing but with
an impenetrable wall of Cattails about it. Deep
water in center. No chance for dip netting. Drove
N again to Rio del Mar + took the road to
Corralitos. The large Corralitos Lagoon has
already been drained + planted. Local people
say this has been done ever since they remember
so if Ambystoma ever used it they were probably
eliminated years ago. Checked another pond near
Corralitos. This had been given same treatment
as Corralitos Lagoon until recently but is now
allowed to remain as a pond. Does not look
promising as a pond despite beautiful oak
woods East of pond area. Should be worth a
road check during the rainy season next year.

J.D. Anderson
1958

Journal

May 18 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Next drove over to a small shallow pond near the large Elliecott pond (along San Andreas Road). See sp. accounts for full locality. Found A. tigrinum larvae extremely abundant. The N part of pond has ~~been~~ shrunk to $\frac{1}{3}$ original size. Larvae are being crowded. Tried to measure density (see sp. accounts). Worked here + Elliecott pond until 3:30 pm. Then returned to Valencia to pick up traps. Then home at 4 pm. Back in Delbony at 6:30 pm.

Notes on Arroyo pond, Monterey Co., Calif

Visited this pond between 7-8:30 am. Taricha granulosa has been taken here. Thought it better to check for Ambystoma. Pond is small - between 65 + 75 yds long + 30 yds wide at widest point. Long axis runs E-W. Relatively flat on South side where there is a thick border of willows which extend around on the east side. A steep grassy slope with scattered Baccharis faces S. A very thin fringe of Eleocharis borders the pond except where willows extend into water. There is a much steeper depth gradient here than at either Elliecott or Valencia. Bottom softer, water is darker. Potamogeton abundant + covers almost entire surface. Different snail - steep species + a larger bicolor clam.

J. D. Anderson
1958

Journal

May 22

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Rain fell most of day today in Berkeley - often in very heavy showers. Undecided about going when it cleared at 5 pm. But at 6 pm came another heavy rain so I left at 6:20 pm (PDT). Arrived Valencia at 8:30 pm (PDT). Still quite light in open spots - dark enough to need flashlight in woods. Walked along road cut of hill road to check on moisture + possible emergence of salamanders from the many crevices, burrows + root network along the road cut. Saw 4 Batrachoseps attenuatus moving about on the damp soil. All exposed soil was damp - just enough to be darker in color. No film of water - soil would not pack into a ball. Saw 1 large Bufo slug + 1 Helminthoglypta but nothing else. At 9 pm began regular road checks along Bonta road from parking area to last large oak tree + up on the hill road.
1st 9:00 - 9:25 (PDT). - 10 Batrachoseps, 1 adult Hyla regilla, 5 Helminthoglypta and hundreds of tiny, newly transformed Hyla.
2nd 9:30 - 9:50. 1 subad. Ensatina, 3 Batrachoseps, 4 Helminthoglypta, 1 large snail, 1 millipede.
Temp 1/4" 20.8°C; soil temp 17.0°C.
2nd - 9:55 - 10:25 - Hill Road
3 subad. Ensatina, 2 millipedes, 3 Helminthoglypta.
Heard 3 different ♂ Horned Owls.
~~17:25~~

J. D. Anderson
1958

Journal

May 22 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
4th check - 10:25 - 11:05 - Bonita Rd.

1 subad Ensatina, 1 ad ♀ Ensatina, 4 do
4 Helminthoglypta, 2 large snails.

Temp $\frac{1}{4}$ " - 19.4°C ; soil 18.0°C .

RH - sling psychrometer -

This was last check here. Road quite wet.
Cell depressions & holes are full of water
much as they are after first heavy fall
rains. But no Ambystoma. Plethodontids
made some response but apparently nothing
short of floods will bring the nocturn out.
Worked the owl wood for $\frac{1}{2}$ hour, using both
Coleman lantern & large flashlight. Saw no
salamanders. In all above road checks &
wood check - young Hyla were everywhere
under foot.

Drove over to the New tiger locality - $\frac{8}{10}$ mi
mi. N. W. Ellicott. Checked for transforming
A. tigrinum but saw none. Water looks
about same as it did on May 18. But
rain may have contributed some to that.
Left for home at 12 midnight - arrived home
1:45 am (PDT).

J. D. Anderson
1958

Journal

May 25 Albany to Calaveras Co., Calif

Left Albany at 4:30 am to check Sierran macrodactylum localities. Drove E. on U.S. 50 to Stockton + then switched onto State Route #4. This road, though rough in spots + narrow, has little traffic + makes best approach to the Elbert Pass localities. Checked several streams in foothills (1500 - 2500 ft) for Taricha but had no luck. Arrived at Camp Cornell just east of Calaveras Big Trees (actually near Dornington) at 9:00 pm. Found snow gates across road at this point which made travel to the Ambystoma locality at Big Meadow impossible. Local residents say that there is still snow pack in Big Meadow area (drifts to six feet?). So macrodactylum may not have become active as yet. I was sorely disappointed by this. Worked a little at 5000 ft and found there was still frost under many logs here. Saw 1 Gerrhonotus but did not get it. Worked at a pond near Arnold hoping to get macrodactylum. This is really an artificial pond about 1 acre in surface area. An earth dam at West end is relatively new. I remember this spot as a weedy meadow. Saw Triturus mostly Bufo in shallow areas (elev. ?). Got 1 garter snake (T. ?). Drove down to a reservoir near Murphy.

J. D. Anderson
1958

Journal

May 25 Albany to Calaveras Co., Calif

Got another garter snake (T. elegans couchii). This body of water is deep + steep sided and obviously artificial. Many fish + fisherman seen. No sign of salamanders. Worked in Oak - maple riparian above reservoir but found nothing. Worked slowly back thru Murphys, San Andreas, Lodi + Stockton. Checked several stock ponds in foothills but got nothing. All natural ponds are apparently dry at lower (below 2000 ft) elevations. The Digger Pine belt doesn't look like Ambystoma country. Rolling hills with stream not favorable. It is climatically like the valley - hot + dry. This belt probably separates A. macrodactylum and A. tigrinum. However at high water, as now, such streams as Calaveras + Stanislaus may bring Ambystoma macrodactylum down from higher elevations.

After reaching Stockton + drove home on freeway. Arrived Albany at 4:45 pm car tired + disappointed.

J. O. Anderson
1958

Journal

May 31

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left Berkeley at 8 am with Dot Wilhoft. Arrived
Valencia 10 am (PDT). Began dip net work at
10:15. Dot worked shallow water & I worked deeper
places. In 2 hours of netting I got only 3 croceum
larvae - all taken in 13-15" of water in extremely
thick patches of Polygonum (type c floating leaves).
Dot got nothing but tadpoles. Larvae are harder
than ever to catch - seem to be more & more
attracted to thickets - but always where there
is water for swimming. Ate lunch 12:45 - 1:30
then I drove over to Ellicott Pond - leaving
Dot on beach. Worked Ellicott for 2 hours - got
only 1 croceum but picked up 3 tigrinum. The
shallow areas near willow clump are not
so productive now - possibly due to temp
factor since they are more shallow & heat
faster. Saw 1 night heron, 2 coot & 2 mallards
(a pair) here. No gulls or wading birds as
previously. Drove back to beach at 4 pm to
get Dot then we went to Tiger pond - 1/2 mi
NW Ellicott. Found the area worked 18-May to
be completely dry now. Remains of pond has
a little water - 2"-4" deep. 4" max. and not much
of that. No salamanders in it. Temp water 28.5°C
at 5 pm. Temp. could be limiting. Made a
very thorough search of dried area & surroundings
but found no trace of tiger salamanders.

J.D. Caudron
1958

Journal

May 31

Valencia Lagoon Rio del Mar, Santa Cruz Co., Calif.
Decided to dig in former pond area + surroundings to see if the newly metamorphosed Tigrinus had dug in for the summer. Dug in all mammal burrows at pond side - found nothing. At pond site water was stuck at 6" - holes filled up. But got no salamanders. Found several aquatic beetles in the area - most encased in mud balls, with a chamber smoothed out around them. Chamber about $1\frac{1}{2}$ - 2 times body size. They probably go over summer in there. Salamanders apparently do not. A search of grassy margins of dried pond produced 2 dried (mummified) Tigrinus. These apparently did not make it. These were the only dead amphibians found either at margins or in dried (still moist) bottom itself. The mud of former pond was criss-crossed with many Raccoon foot prints. One large Coon could eat a lot of young Ambystoma. Left here at 5:30. Had supper at Red Door Inn. Returned to Valencia + started more dip netting at 6:45. Got 2 more ~~hairs~~ by 7:30 then called it quits. Traffic heavy on way home.

J.D. Anderson
1958

Journal

June 6

Berkeley to Modoc Co., Calif.
Left Berkeley at 12:30 pm. Drove out US 40 to Woodland turnoff then onto US 99 W. Followed 99 W north to Redding^{5 pm}. Held up 15 min for road work. Ate supper in Redding then took 299 NE towards Canby. A very good road. Drove thru Digger Pine - Blue Oak belt for quite a while. Soon after climbing we hit yellow Pine, Incense Cedar + Doug. Fir. Juniper + sage came in soon to make a rather strange mixture of plant types. Stopped for the night just below (W.) Hatched Summit^{7 pm}. Actual locality 7 mi. W. Burney, 4200 ft, Shasta Co., Calif. Got 2 Ambystoma macrodactylum + 2 Gerrhonotus coeruleus by turning logs + bark. After dark I hunted for frogs + salamanders with no luck. Light showers throughout evening. Ward + Ned hunted owls with no luck. Did not hear any. At 10 pm a loud chorus of Coyotes sounded off on ridges all around. Went to bed with that sound in our ears.

June 7

Burney to 10 mi. W. Canby, Modoc Co., Calif.

Up at 5:30 am. Drove over Hatched Summit and had breakfast in Burney. The country from Burney to Canby is diverse. Many open flats of Juniper + Artemisia, interspersed between mixed yellow Pine - Juniper forest. Lots of water in all meadows. Pitt River is very high. Stopped in Canby for gas. Saw local Forest Rangers. They told us that the old campsite at Hackmore was non-existent + directed us to a new camp at Cottonwood. Rangers said that they have seen

J. D. Anderson
1958

Journal

June 7 10 mi. W. Canby, 5500 ft ~~W~~, Modoc Co., Calif.
salamanders in pools (permanent??) near the cottonwood
camp. Took us awhile to get into this camp since
several roads were out and other roads had changed
position since the map was printed. Got in & settled
by 12 noon. After lunch I walked south out of
camp through Yellow Pine, Incense Cedar, ~~Doyle~~ ^{White} Fir &
Juniper forest. Saw several Sceloporus occidentalis
but did not collect any. Took road leading to Happy
Camp lookout, about 1 mi. up road I took off up
a S facing, open slope. Juniper & sagebrush main
vegetation. Got 1 Sceloporus occidentalis & 1 A. gerrardi,
saw 2 Uta stansburiana. Flowers in bloom yet &
things are quite green. Wyethia, Indian Paintbrush
& Buttercups very common. Worked back towards
camp following a small stream hoping to find
Ambystoma or Ambystoma breeding ponds. Drew
lemons on both. Saw no eggs at all along stream.
Surprised at the absence of frogs. Many logs & fallen
trees in country - should produce some snakes. Some
hillsides with the volcanic rocks - blackish - look good
for Hypsiglena. Got a Myotis evotis under an
exfoliating piece of lava.

Note omitted. While driving into Cottonwood camp
from Canby - Klamath Falls road we saw several
Antelope. 1 Buck seen at McKay Flat. 2 Does &
3 young seen about 1/2 mi. E. McKay flat. They
were all out in open sagebrush bordered by

J. D. Anderson
1958

Journal

June 7

10 mi. W. Canby, 5500 ft., Modoc Co., Calif
Yellow Pine - Juniper forest. Got excellent look at
Doe - young group thru binoculars. Further along
in another flat we saw two deer.

June 8.

Up at 5:30. Out of camp on walk by 6:45.
Walked NW out of camp towards Craig Springs.
Still cold & overcast. Clouds building up fast since
dawn. Forest to NW of Cottonwood flat is
much like rest of area. Yellow Pine dominant, lots of
Incense Cedar, some ^{white} ~~leaf~~ Fir. Juniper very abundant
in some places - on flats, clearings & along meadows.
Wherever forest opens up sagebrush is present.
Wyethia mollis most common flowering plant most
places. Castilleja common especially between
sage plants. Buttercups everywhere. Montia grows
in small pine groves. The whole area has been
logged over so the trees are small mostly. Some large
Yellow Pine. Fallen, dead trees, large branches, stumps
of bark & woodpiles common - provides good cover
for lizards. Walked 3 1/2 miles to Craig Spring
collecting on way. Very little lizard activity since
it is quite cool 12-15° C. except ~~when~~ for rare
occasions when sun came out. Light showers fell
throughout morning. Made one side trip off into
a large, wet meadow bordered by aspen, star Juniper
& finally Pine forest. Got only 1 Sceloporus occidentalis
& that from under a rock. Further along
the main road & got 1 Eumeces skiltonianus

J. D. Anderson
1958

Journal

June 8

Cottonwood Flat, 10 mi. W. Canby, 5500 ft., Modoc Co., Calif.
from under bark of a dead yellow pine. Worked
Craig's Springs area for Ambystoma, with no luck.
A nice pond here - full of Hyla tadpoles and
much other aquatic life (Corixids, Gerrids, Belostomatids etc). Turned all logs in area. Will have
to come back for some dip net work to be
sure there are no Ambystoma larvae in pond
before writing this area off. Country looks fine for these
salamanders, lots of conifers, good cover & still plenty
of moisture. However the ponds are mostly artificial
now & there is no way of knowing whether these
were ever suitable breeding areas here. All the
meadows I have examined thus far are just soggy
boys with no good standing water. Only places I
have seen frog tadpoles are in slow moving streams
and small artificial ponds - not in meadows. Tomorrow
may well tell whether or not this will be successful for
salamanders. Left Craig Springs at 11 am & walked
back to camp by 12:15 pm. Disappointing morning for
herps. Too cold - no snakes at all. Preserved specimens
& put up Bat after lunch. Then walked north out of camp
following small stream to an aspen grove where I'd
heard Hyla regilla. Unable to contact Hyla. Got
3 D. occidentalis, including gravid ♀ on way. Found
a young Peromyscus at edge of aspen. Kept him for
couple of hours for pictures. Back to camp for supper.
Birds seen so far in vicinity of Cottonwood flat:

J. D. Anderson
1958

Journal

June 8 Cottonwood Flat, 10 mi. W. Canby, 5500 ft., Modoc Co., Calif

Robin	Flicker	Horned Owl
Red-wing	Wright Flycatcher	Chipping Sparrow
M. Dove	White-headed W. pecker	Creeper
Or. Junco	Sapsucker (hybrid?)	Red Br. Nuthatch
Song Jay	Chickadee	Mtn. Quail
Wilson Snipe	Goshawk	Red-tail Hawk

Just before supper Ward shot a gray squirrel right in camp. This should be either a range extension or right on edge of range.

Cottonwood flat takes its name from few large, old Cottonwood trees along the stream bed here. The camp is situated on a flat bench (mesa?). Stream runs thru about ~~the~~ S to N. ~~For~~ low ridge parallel to stream with forest as described for most of this area. W. end of flat is a grove of small (cb 50 ft) yellow pine. Another low ridge runs SW-NE about 150 yds E of camp. This is mostly yellow pine with Incense Cedar + some juniper. The flat itself a soggy meadow lies between + extends about 1/2 mile to N.E. Stream is at N side of flat. After dark (actually at dusk) I walked NNE from camp following the stream back toward the aspen grove visited earlier today. Heard several Hyla regilla + collected five. Back to Camp at 10 pm. Met Ward + Ned then went hunting 7 lammulated O. wls. Walked NW out of camp + had an owl answer Ward's call almost immediately. It gave 2 calls + then shut up. About 100 yds down road the

J.D. Anderson
1958

Journal

June 8 10 mi. W. Carby, 5500 ft., Modoc Co., Calif.

procedure was repeated, this owl gave 3 calls then became silent. Got 2 or 3 more replies of 1 call each. None gave us a chance for a shot or an eyeshine - so no specimens. Back to camp at 12 midnight & then to bed. Got rained on heavily during early morning hours. Still raining at dawn.

June 9 Up at 6. Still raining so breakfast, cleanup etc was confused & slowed down. Out of camp at 7:45 am. Walked SE towards Yellowjacket Spring thru forest which is much more open than everywhere else here - little more open, probably result of more recent logging. Not raining but overcast & cold - 13°C . Turned logs all morning & got just 1 Sceloporus occidentalis. Shot a chipmunk with .22 pistol at Yellowjacket Spring. Returned to camp at noon. After lunch pickled specimens collected last night & put up chipmunk. Raining hard from 12 - 2 pm. At 3:30 pm I walked NW from camp to a small canyon running due west. Worked in it for $1\frac{1}{2}$ hours. Got 1 Eumeces skiltonianus on a moist north-facing slope. Like all lizards taken so far it was cold & inactive - easy to catch. Another unprofitable "herp." day. Most of day spent hunting for Ambystoma localities to no avail. After supper I tried to locate Bubo boreas-like calls coming from far end of meadow near camp - no luck. Ward thinks that this voice could be a Wilson Snipe. Will try again tomorrow. At 10 pm Ward, Ned & I went hunting Thamnophis Oads. Worked the

J. D. Anderson
1958

Journal

10 mi. W. Canby, 5500 ft., Modoc Co., Calif.

June 9 area NW of camp. Good habitat, lot of tall yellow pine + juniper cedar with many young trees coming up. Got 1 Thomomys at 11:00 pm and heard another soon after. Did not collect 2nd since it talked for only a short while + then moved on. Heard 1 saw-whet owl + several Horned owls. Returned to camp at 12:15 am soon after hearing what we suspected were flying squirrels. Will try trapping some tomorrow. During the night some rodent came into the tent + chewed the rawhide laces off one of Ned's boots + chewed clean thru the tongue of the other. Could be those squirrels again.

June 10 Up at 5:30 am. A bright morning for once. After breakfast I drove NW out of camp in the truck to check mud lake for Ambystoma. About 5 miles out of camp the road became too slick with mud to drive any further. After wrestling with the chains I was able to back the truck to a decent surface + return to camp. After this it was 10 am before I got to do any collecting. Sun still shining, sky clear, far warmer than any day thus far. Worked Pine ridge E East of camp. Got 1 Eumeces skiltonianus almost immediately - under bark again + in timber which they seem to prefer. Got several Sceloporus occidentalis in here. 1 Hyla regilla hopping thru the Pine forest. Saw Red-tail with a bleeding. Returned to camp at noon. 1 pm took off SW + then up a canyon which leads to Happy

J. D. Anderson
1958

Journal

June 10 10 mi. W. Canby, 5500 ft., Modoc Co., Calif.
Camp lookout. Small stream runs thru narrow canyon
50 yds wide. Heavy pine forest with considerable white fir
on N facing slope. S. facing slope open mainly sagebrush
and scattered junipers. Pine forest in spots on top of
ridge but many openings with sagebrush + juniper.
Top of ridge is where I got S. graciosus + S. occident.
together on June 7. Walked along open slope about
100 yds from bottom. Warm + sunny. Got 2
Coluber constrictor in short order. S. occidentalis
everywhere on slope - no S. graciosus. They may
be restricted to ridge tops in good sagebrush. Returned
to camp at 3:45 pm. Preserved all material before
supper. Began raining heavily at 5:45 pm. A good
thundershower which lasted until 8:30 pm. At 9:50
we left camp for an owl hunt. Walked up the
road past Cedar Springs + on towards Happy
Camp. Got a Flammulated Owl in the canyon bottom
where timber is heavy (see Dr. Acc.) Many Horned Owls
hooting along the canyon. Ward Russell shot a large
♂. One other Flammulated answered Ward's call but
it became quiet shortly + did not give us a shot. Returned
to camp at 11 pm. Found a Wood Rat in one of the
Schyler traps Ward had set near the tent. Went back
out owl hunting for two more hours but had no
luck.

June 11. Up at 5:30 am. Broke camp + out on road by
8:30 am. Road to Canby was very muddy + slick

J. D. Anderson
1958

Journal

June 11 Conby, Modoc Co. to Burney, Shasta Co., Calif.
Probably would not have made it without the chains.
Met road crew from forest service who would not attempt
to go uphill. Gassed up at Conby & drove west on
Rt 299. Road runs thru Yellow Pine forest for a
few miles out of Conby and then drops down to
sagebrush flats near Adin. Just out of Nubieber it
goes over another ridge with good heavy Pine-Fir
forest & drops to another, smaller sagebrush flat. Near
McArthur it again goes into Pine-fir which blends into
Digger-Pine - Blue Oak for awhile. Last of real juniper
sage-brush country fades out between ~~McArthur~~
Fall River Mills & Burney. Ate lunch in Burney
then tried to find a suitable camp near Lake
Britton but found it unsuitable. Country too open
not much timber and quite dry. The lake, though
large, does not look good for Ambystoma. Returned
to Burney & thence west on 299 to our first campsite
7 mi. W. Burney, 4300 ft., Shasta county, Calif. This
locality is just west of Hatchet Summit (.5 mi. W on
speedometer). Set up camp here in tall Yellow Pine, Incense
Cedar, Doug. Fir forest. Quite close to Rt. 299. After
getting camp organized I walked east towards the
summit turning logs & boards. Worked for 2 hours but
found nothing. A small stream runs E to W from
summit & drains into a larger stream which in
turn runs thru a boggy meadow on the south
side of Rt 299. Most of my afternoon was

J. D. Anderson
1958

Journal

June 11 7 mi. W. Burney, 4300 ft., Shasta Co., Calif.
spent along this creek looking for suitable
breeding sites for Ambystoma. Found nothing at all.
The meadow has no real standing water & I doubt
that Ambystoma can breed in the rather shallow
fast moving stream. People at the Highway
Maintenance Station at Hatchet Summit do
not recall ever seeing a salamander in this
area. They are here, of course but may
not breed close by. Just before returning to
camp I broke open a rotted log & found a
microtine rodent - possibly Clethrionomys. The
wood was rotten so as to be soft as humus.
The mouse had a runway system built
through the wood. After supper it rained
hard & heavy. Spent the evening skinning the
mouse & the owl from previous night. Went to
bed about 11:15 in a very heavy rainstorm.

June 12 7 mi. W. Burney, 4300 ft., Shasta Co., Calif.
Up at 6 am. Everything's dripping wet from
last night's rainfall. After breakfast &
walked across meadow & then SW down a
narrow canyon with an intermittent stream.
Canyon begins at W end of the meadow mentioned
above. Canyon soon runs E.W & stream becomes
permanent. Heavy timber in bottom & low slopes -
almost entirely large Douglas Firs - quite like
similar situations in Coastal Calif. Saw several

J. D. Anderson
1958

Journal

June 12 7 mi. W. Burney, 4300 ft., Shasta Co., Calif.
Varied Thrushes which strengthened the impression.
However much work in bottom produced no
amphib. or reptiles. Lots of maple scattered
thru canyon. Yellow Pine + Incense Cedar
common on higher slopes. On way back from
canyon + close to the beginning of it I
collected 3 Ensatina eschscholtzi. These taken
under slab of bark lying on ground. A facing
slope (see sp. acc.). Back to camp for lunch,
then went N out of camp + up to top of
heavily timbered slopes. Followed all stream
in area hoping to get to some sort of
pond but I was unsuccessful. Spent most
of afternoon doing this + turning logs. Got
just 1 Peromyscus + that's all!! After
supper me (Ward, Ned + I) drove towards
Burney + stopped in the oak belt 2/3 way down
East slope. Ward tried Screech Owl calls
+ got 1 specimen. Spent rest of night
hunting Spotted Owls + Flammulated owls
near Hat Creek Summit with no luck. Got
one answer which may have been a
Spotted Owl. Back to camp + in bed by 1 am.

June 13 Burney to Berkeley Calif.

Up at 5 am broke camp + on road by 7 am.
Arrived in Berkeley at about 1 pm. ± 15 min.

J. D. Anderson
1958

Journal

June 20

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left Albany at 5:45 am + arrived at Rio del Mar
at 7:50 am. The dirt roads skirting the lagoon +
the oak woods have been fixed after the long drying
out period following heavy damage this winter. Personally
I wish they wouldn't touch them. Road around pond
(Banta Dr.) was not bothered much - some holes filled.
The road into the hill area was worked on by a
grader + widened a little although they seem not
to have cut any trees. Some brush which had
accumulated was pushed aside but no major
disturbance. The pond has shrunk considerably
since 31 May. Main area of water restricted to
immediately in front of large willow to edge of
~~East~~ (East) Emory willow clump - see map.
Pattern of recession essentially as in 1956.
Began dip net work for larval sample at 8:15 am.
Got 5 large larvae by 9:10. Returned to car
to transfer these to gallon jars. Worked again
with net between 9:30 - 10:30 am. Got only 3 more
larvae; making 8 in 110 min. Tadpoles are way
down in number. Newly metamorphosed Hyla are
everywhere around edges. Every leaf + grass blade
seem to have its tiny tree frog. Saw 3 or 4 newly
metamorphosed Rana aurora, also caught several
in dip net with 4 legs + partly absorbed tail. Still
quite a few aurora tadpoles which have no
legs. Belostomatids extremely abundant. Most are

Journal

June 20

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
nymphs of Belostoma but very large. Fewer
all being large adults. These seem most
abundant where there are no Ambystoma but I
did not keep close records. As many as 4 Belostoma
in 1 haul of net. Corixids & notonectids are
more numerous than ever before. Couchostacum
present but down in numbers. Snail, as usual, are
most numerous invertebrate. Saw pair of coot &
pair of Mallards. After caring for the 3 new larvae
I began a systematic check of newly dried areas
to attempt to find any newly metamorphosed
Ambystoma. Checked under mats of Polygonum
at SE corner of pond, worked under all Willows
along N edge of pond, Polygonum & logs at
NW end and stones at W end & finally litter along
S edge. Took about 1 1/2 hrs. but found no sign
of Ambystoma. Lost my Schultheis Thermometer
on this search. Retraced steps & found it is
next to last stop. While walking thru dry
Eleocharis & grass at former SW. corner of
pond I noticed the area was a maze of
Microtus runways. I've never seen so many.
Actually saw 4 or 5 Microtus running about &
heard many more. Found 1 drowned Microtus in
Can trap # 2 right in oak woods. A real
high population here. Ate lunch 10:15-12:45.
Then over to Ellicott Pond to get larvae for

J. D. Anderson
1958

Journal

June 20 Valencia Lagoon, Rio del Mar, Santa Cruz Co. Calif.
food study. This pond has shrunk some but there is still deep water > 3 ft deep in middle. Eleocharis has become so thick that dip netting is impossible most places except in deepest parts. Worked there for 1 hr 15 min. with no luck. Here too the young Hyla are hopping about in fantastic numbers. Saw several newly transformed R. aurora as well as tadpoles in all stages of metamorphosis. Worked under the willows turning logs for newly metamorphosed Ambystoma. Got 1 under a small, rotted willow branch after turning practically every log in the place. Just after getting it I was bending over to get at another log & jammed a dead willow twig into my left eye. Tip of twig hit the eyeball & broke. The broken portion deflected upwards & lodged under the eyelid. Extremely painful. Extracted it & returned erratically to car. After bathing eye for 3/4 hour it opened & felt better. But in another hour it began to throb & smart. Lid swelled again so I decided to drive home while I could still see. Arrived Berkeley at 8 pm, deposited animals in MVZ. Home by 9. Sight still blurred in left eye. Bathed it for an hour & felt much better.

J. D. Anderson
1958

Journal

June 25

Albany to Elblett Pass, Alpine Co., Calif.
Left home at 4:45 am. Drove south on eastshore
freeway to Jct. US 50. On 50 to Stockton & then took
Rt 4. Arrived at Big Meadow, 6500 ft, Calaveras
Co. at 9 am. Worked the snow pond where I had
taken Ambystoma macrodactylum larvae in past years.
Saw nothing in pond but invertebrates & small tadpoles -
Hyla(?). Turned logs in vicinity until about 10:30 am
with no luck. Sky clear, warm day. No snow here
& very little moisture except near pond & streams.
Decided to try hunting at higher elevations. Drove
up Rt 4 past Lake Alpine to Pacific Slope Summit
8050 ft. At about 7000 ft there were scattered patches
of snow. 7500 ft snow extensive in shaded areas.
8000 ft much snow everywhere. The lakes at the
summit - called Mosquito lakes by a forest service
worker, but unnamed on topo sheets - were still
iced in. Very little open water present & thus no
fishermen as yet. About 150 yds N of the road
there are two snow ponds in the woods. One
is almost completely bailed & free of snow, the
other is just about bailed but is half covered with
snow & soft ice. Found Ambystoma active
in both of these ponds. In first pond (see sp.
account for descriptions) 14 were collected ♂♂. ♀♀.
Eggs were in abundance. Snow reached edge of
this pond only at one point about of line about
10 yds long. The second pond has 52 yds due

Journal

June 25 Pacific Slope Summit, 8050 ft, Alpine Co., Calif
west of 1st pond and is on other side of small ridge
roughly 30 ft high at lowest point. Snow melt off
flows to one pond or another off this divide. Lowest
point is devoid of vegetation & has but thin soil cover.
Granite ridge rises from this point and goes up
to 60 ft above pond 1 & effectively separates it
from pond #2. Pond #2 is described in detail
in sp. accounts. Collected 7 *Amphystoma* in #2 in
extremely cold water. Most of these taken on bottom
exposed to sunlight. Returned to pond #1 to
get eggs & larvae. Found large (overwintered)
larvae along edges of pond #1. These did not
swim about the way I've seen larvae do in
this type of pool later in summer. They hid
in debris at ponds edge - most commonly under
small bits of wood resting on bottom. ~~also~~ Found
many eggs attached to undersides of logs,
branches etc in pond. Finished up work at about
4:15 pm. Wrote some notes & took pictures then
at 5:05 pm started back down Pt 4 (west).

9.6 mi. W of This spot & actually 1 mi. NE (by road)
Calaveras Co line, Alpine Co., Calif. & stopped at
another snow pond 25 yds long by 10 yds wide &
17" deep at deepest point. Caught 1 rather small
ad. *Amphystoma*. Continued down road, stopping
at any pools or meadows but got no more
Amphystoma. Checked cowbills at the Big

J. D. Anderson
1958

Journal

June 25

Pacific Shore Summit, 8050 ft, Alpine Co., Calif.
Meadow Pond. Found ~~the~~ jelly coats of eggs under
many logs. All eggs were hatched but not yet
disintegrated. Only 1 had an embryo - dead & mangled
but it was identified as late tail bud stage.
Sweeping with dip net produced nothing. The
larvae are newly hatched & experience has
shown that they are exceedingly difficult
to catch at this stage. Fairly shrimp very
abundant, notonectids (large) also common. Saw 1
huge predaceous water beetle - possibly predator
on Amblystoma. Finished up here & left for home at
about 8:15 pm. Arrived in Berkeley about 1:00.
Dropped specimens off at MVZ & home by 1:45.

J. D. Anderson
1958

Journal

June 28

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Berkeley at 7:15 am with Dot Wilhoft. Drove to Rio del Mar by usual route arriving at about 9:30 am. Began work with dip net almost immediately. Pond has not shrunk much in area since last trip but the level has gone down considerably being 20-24" deep in deepest holes & averaging 8-10" deep. Worked for $1\frac{3}{4}$ hours getting only 1 larva. Dot used net too so coverage was very good. Spent 1 hour turning logs & mats of vegetation in search of metamorphosed animals but found none at all. In water Notonectids are extremely abundant. Belostoma very common - mostly very large, wingless nymphs. Had lunch 12:45 - 1:15 after dropping D. at beach for the afternoon. Worked Ellicott Pond with dip net for $1\frac{1}{2}$ hours (1:30 - 3 pm PDT). Then began search for metamorphosed animals under logs in the willow thicket. First 30 mins. I worked close to shore line where soil under logs is very moist - got nothing. Hyla regilla juvs in fantastic numbers here. Next worked back towards back end of willows & began to pick up newly metamorphosed juveniles A. m. croceum. about 60-90 ft from water's edge. Recorded cl. temps and collected soil samples for moisture determination. Picked D. from beach to help with this. Ate supper at about 6:45. Returned to area & worked with

J. D. Anderson
1958

Journal

June 28 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
lights until about 9:45. Got total of 8 juveniles.
Then drove back to Valencia for a check but
were unable to connect with Ambystoma here. It
may be that the earlier ~~start~~ start of breeding
at Ellicott is responsible for ~~the~~ getting
animals there & not at Valencia. However pond
has shrunk proportionally faster at Valencia
than Ellicott & I would expect metamorphosis
here too! But larvae are not to be found
at Ellicott any longer - by methods employed
up to now while they can be taken at
Valencia - but are far & few between. Left
for home at about 10:30 & arrived in Berkeley
at about 12:45 am. Traffic was heavy -
due probably to nice weather & the Miss
California contest at Santa Cruz.

J. D. Anderson
1958

Journal

July 2

Mosquito Lakes, 2 mi. W. Lookout Peak, 8050 ft, Alpine Co., Calif.
Left Albany ^{with N.K. Johnson} at 5:00 am. Drove to US 50 to Stockton & then took State Route 4 east into Elbert Pass area. Arrived at Big Meadow, 6500 ft., Calaveras Co. at about 9:15 am. Checked the snow pond at Big Meadow for Ambystoma larvae. Last week I couldn't find larvae but did see newly hatched eggs. This time very small larvae were abundant in shallow, clear water along edges of the pond. Difficult to get with dip net since they hug the bottom closely. Got sample of about 15 which were preserved soon after capture. Continued driving east on Rt 4. Stopped $\frac{3}{4}$ mi. W. Mosquito Lakes to check a snow pond for Ambystoma. It is a likely pond but we found nothing. Ned saw a young ♂ Pine Grosbeak. Along road I saw 1 ad. ♂ Evening grosbeak. Arrived at Mosquito Lakes at about 11 am. Ate lunch & then started work. I checked the series of small snow ponds ~~and~~ across road from Mosquito Lakes while Ned went bird hunting. Got 2 ♀♀ ad. macrodactylum in pond #1. 1 was under a log at pond edge (on land) & the other was in water at edge under a small (8" x 4") piece of bark. Worked around for larva (last year) and got 2 of the waxy critters. More eggs have been laid but I won't work on there until tomorrow. Next walked over to Pond #2 which is now full & almost completely free of snow & ice. Collected 5 ♀ macrodactylum in here. No sign of eggs as yet but 3 of the ♀♀ had eggs in the cloaca indicating laying activity. The log between ~~the~~

J.D. Anderson
1958

Journal

got 5 ♀♀

ponds 1 & 2 still prove interesting. A thorough search of #1 produced only 2 ♀♀ at edge, eggs have been laid & animals are leaving. In #2 ♀♀ abundant, fertilized & laying. Ground snow is much reduced now except in well shaded areas. Walked over to the original two ponds which Don Wilhoft & I found last year. Last week they were snowed in tight but this week they are open but with considerable snow around the edges. Got 3 ♀♀ + 1 ♂ at pond #3 (circular pond of last year). & 1 ♀ at pond #4. Sprung a leak in my left boot & the cold water numbed the foot so I took time out for repair. Ned returned soon after so we ate supper (5 pm). At 6 pm I worked pond #1 again for larvae. Light was bad but I got 4 in some aquatic vegetation (dead). They were resting well up on the leaves - off the bottom about 3-5" in water approx. 10" deep. Back to camp to write notes. Trees here as follows Lodge Pole Pine, White Pine, Red Fir, White Fir & Mt. Hemlock. Good Canadian zone vegetation. At 9 pm I worked all 4 ponds to see if animals were active as yet. Not quite dark enough for lights to be effective & too dark to see very well. So back to camp. Picked some salamanders. At 10 pm Ned & I went to Pond #2, using Coleman lantern & flashlight ~~under~~ saw a ♀ walking under small log 2 ft from shore in 6" of water. She bled & I checked under log & found freshly laid eggs which were not there late in the afternoon. at the west end of the pond where there are many logs & litters in water we saw 6 more ♀♀ all moving about the logs. Two were near

J. D. Anderson
1958

Journal

July 2 Mosquito Lake, 8050 ft., 2 mi. W. Lookout Peak, Alpine Co., Calif.
a large log which I had checked for eggs today & found none. One ♀ was between a piece of wood pulling off bottom of log & log proper - just where eggs are commonly found. Another was seen clinging to bottom of floating log but swam off when light shone on her. Thus a total of 7 ♀♀ seen in 20 minutes. We walked over to pond #3. Saw 1 salamander - not able to sex it as it escaped. Back to camp at 11:15. Plenty of activity between 10-11 pm. Water temp in pond #2 - 7.5°C. Hit rock at 11:40 pm.

July 3 Mosquito Lake, 8050 ft., 2 mi. W. Lookout Peak, Alpine Co., Calif.
Up at 6:45 am. After breakfast I worked pond #2 in order to see if ♀♀ active last night had deposited eggs. Almost every log at NW end of pond #2 had Ambystoma eggs under it. All freshly laid - most uncloned as yet. The eggs which were found last nite (see above) are ~~not~~ now in the 4 cell stage. Collected a batch for description & experiments. Worked other ponds in the area. No eggs as yet in ponds 3 & 4 which were still snow covered on June 25, 1958. Collected 1 ad. ♂ in Pond #4. Two nice adult Rana muscosa in this pond also. First adult muscosa I have seen outside of Mosquito Lake themselves. Hyla regilla now in full chorus in ponds 1 & 2. They were singing in #1 on 25 June but were absent from #2. Now in #2, eggs of H. regilla abundant in pond #1 but absent as yet from #2. Ambystoma thus is the first amphibian to breed in these ponds.

Journal

July 3

8050 ft

Mosquito Lake, 2 mi. W. Lookout Peak, Alpine Co., Calif.
 Interestingly there were no Eubrachyptids in any of these ponds. Saw many juvenile E. muscosa but only two adults. The terrain around all of the ponds in the area is rocky - many bare granite outcroppings border ponds. Very little flat ground with good soil. Trees scattered. Large trees few. Usually in groups of small trees around the ponds. After working ponds 2, 3 + 4 I walked down to Mosquito Lake proper. Checked all shallow margins, turned logs in water etc but found no salamanders. Talked for while with a fisherman who has been coming here in late June for years. He has seen the salamanders in the snow ponds + elsewhere in series but claims he has never seen them in Mosquito Lake. This plus my own experience makes it doubtful that they now use the lake. The trout could be responsible. Also there is very little in way of shallow margins for Ambystoma. Went back to Pond #1 + checked eggs observed on June 25. These are now in stage 32 (Rugh). They were in 8 + 9 th on June 25. Ned + I got back to camp about same time. I saw a flock of Crossbills just before he returned. He had already gotten 7 so it didn't matter much. Broke camp at about 12:30 pm + drove east on Rt. 4. Stopped night at 1800 ft 30 yds W. Elbert Pass proper. Got 2 ad. ♂ A. macrodactylum in a small snow pond there. Another pond alongside the road sign was not checked. Many eggs (in blastula) taken at the

J.D. Anderson
1958.

Journal

July 3

Mosquito Lake, 8050 ft, 2 mi. W. Lookout Peak, Alpine Co., Calif.
same pond as ♂ ♂. Drove on east using Rt 4, thru
Marbleville to Woodford. Decided (4 pm) to try to
get Ambystoma in Nevada. Drove east on Rt.
to 395 + then on US 50 to Spooner Summit. Checked
a pond approx. 2 mi. N. Spooner Summit but did not
connect with salamanders. Drove back to US. 50 +
started for home about 7 pm. Stopped to eat in
Placerville. Took 50 to Sacramento then home via
~~San~~ Vallejo, Richmond etc. Back to MVZ about
midnite. Home about 1 am.

J.D. Anderson
1958

Journal

July 5

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left Berkeley at 7:30 pm with Dot Wilhoft. Drove by usual route arriving at Rio del Mar at about 9:50 am. The "lagoon" is drying up fast. Water is restricted to the central area beginning at Lost (West) large willow down to Old willow clump. Some pools are disjunct from main pool which runs from 2nd (east-most) tule patch to a few yards west Old willow. Nowhere is water more than 8" deep & most places in between 5 & 6" deep. Sky overcast with low fog so water is cool. Both of us worked all the pools which are quite clear, much clearer than almost anytime to date. Saw only Hyla + Rana tadpoles plus the usual Notonectids, Corixids + Belostomatids etc. We turned mats of Potamogeton which lay alongside pools hoping to turn up metamorphosing Ambystoma. No luck using this method. Tried turning mats which were a little further away from the water, thinking that perhaps the Ambystoma do ~~to~~ not go under cover until things get really dry. Mats 25-50 ft from water were examined carefully. We found Hyla regilla, newly transformed, to be very abundant under these. Ground under mats is wet & muddy. Found a coiled Thamnophis under a large mat. Chr. temp 17.5°C. Forced it to regurgitate its stomach contents. First out was a recently ingested, tiny Hyla regilla & next was a newly metamorph. Ambystoma m. croceum (spec. saved for measurement, though partly digested). First real record of garter snake

Journal

July 5

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
predation ~~of~~ on croceum & also proof that the
A. m. c. probably use the mats for cover. They would
be quite at the mercy of snakes under mats. Next
tried crawling into the very thick clump of Tule
(). About 15 feet in through
the tule to mat or pile of dead, very moist stalks
was found. Pile about 12" high & 20" wide. Broke
thru it carefully & found 1 small, newly transformed
croceum about 3" from bottom. Cl. temp. 15.8°C , temp.
in pile 15.5°C , temp 1" above pile 17.5°C . In a
second pile about 1 ft from first another croceum
was taken. Did not want to disturb the habitat
any further so stopped this. Really glad to find
where the little croceum are going as the pond
dries up. Stopped work here about 1:30. Ate
lunch 1:30 to 2. Dropped D. off at beach & drove
to Ellicott for dip net work. $1\frac{1}{4}$ hrs work
yielded nothing. Later on we worked the willow
grove S of Ellicott pond & got 6 newly
metamorphosed croceum. D. got 3 & I got 3.
After dark, work with Coleman lantern was
negative. Drove home thru very heavy July 4
traffic.

Journal

July 23

Trip to Carson Pass, El Dorado + Amador Cos, Calif.
Left Albany at 4:50 am with N. Johnson in Johnson's car.
Drove to Walnut Creek to pick up Tom McArthur. Got
slightly lost trying to find meeting place. Finally made
contact + left Walnut Creek about 6:05. Drove to Dublin
then onto US 50 to Stockton. Turned off on State Rt 88
following it to Carson Pass area. Passed thru some
interesting country west of Jackson. *Acerostoma* + oaks
growing low - 3 ft at most - and covering ground
in a creeping fashion. Stopped for gas in Jackson.
Soon after Jackson we hit yellow pine + began
climbing. I get the impression that the rise is
steeper here than lower parts of Elbert Pass Rd. At
least the trees seem to change to good *Conifers*
more quickly. Checked for ponds all along the
way. First stop was at Tragedy Springs, 8000 ft.,
Amador Co. A small snow pond found tucked
away south of the road. Only 10 ft x 8 ft. Worked
it for awhile but it began raining hard. Soon turned
into a heavy hailstorm + it was impossible to see
anything. Storm lasted from 10:15 am to 10:40. After
hail let up it continued raining and got very cold.
~~Drove east to a large pond at Carson Pass, 7292 ft.~~
Drove east to Silver Lake. Stopped at N end of
lake where Rt. 88 crosses the spillway. Checked
edges of lake for *Ambystoma* larvae with no luck.
At this N end there is an isolated bog separated from
main part of lake by a strip of land. Two bodies are

Journal

July 23

Trip to Carson Pass, Amador - El Dorado Cos., Calif.
continuous only at spillway. worked around this
"box" turning logs. Got 1 adult macrobrachium
under a large (36" diam.) yellow pine which had
been cut down. Further search of the area produced
nothing except 1 Gerrhonotus. Drove on to a
pond at Carson Spur, 7990 ft. Still raining and
quite cold. Checked logs all around pond with no
luck. Then worked pond with dip nets + raining so
hard that it was impossible to see anything small
in water. I'm sure I would have been able to see
adults but larvae would be invisible on dark bottom
with poor light + the surface splattered with rain drops.
Drove east further on 88. Stopped at West end of
Travis Lake, Alpine Co., Calif. A stream bed pond
is situated about 100 yds W. of spillway from
the lake. Water shallow, many fallen logs. Bottom
very soft + murky. Checked carefully for Ambystoma
with no luck. Drove on again, east on Rt 88. Stopped
at a small pond approx 30 ft ~~long~~ long by 15-20
yds wide. Probably a spring fed pond. Dense
growth of scrubby willows around it. Red fir, white
pine + lodgepole pine around edges. Rock outcrops
form a low ridge east of the pond. Bottom very
soft + silty. Raining too hard for dip net work. Turned
logs in area for 45 min. but found nothing. Locality
is 4 mi. E (by Rt 88) Kirkwood, 8000 ft., Alpine Co., Calif.
Continued east on Rt 88. Went over Carson Pass to

Journal

July 23 Trip to Carson Pass + vicinity, Calif

Red Lake, 8000 ft, Alpine Co., Calif. Made camp at east end of Red Lake. Tom McIntyre picked up two adult Bufo boreas at campsite. After supper I worked around N edge of the lake for salamanders. Could find nothing in lake or a small pond just north of the lake. Saw a beaver working near an outlet stream of the lake, and a Black Bear working up a hillside NW of the lake. Several spotted sandpipers were working along the N end of the lake. Activities restricted mostly to large floating logs which were jammed up at this side of the lake. Several Brewer Blackbirds were following them and displaying to them. Looked like a territorial display on part of individual blackbirds but they would occasionally "ind" around ~~the~~ ^a sandpiper giving alarm notes. Sandpipers ignored the display. Rain stopped about 7 pm.

July 24 Carson Pass + vicinity, Calif

After breakfast I worked around edge of lake once more. Got 1 Bufo boreas ad. ♀. A temp 17.2°C. Saw Bufo tadpoles all along lake edge. No Ambystoma larvae. Worked hillside + wet area near lake - no salamanders. Left this area at 10:45 am. Began driving east to go to Ellet Pass. Got a flat tire just past Hope Valley. Since there are no service stations to repair tires along Ellet Pass rd, we decided

Journal

July 24 Carson Pass & Vicinity, Calif

to go back over Carson Pass & play it safe until we could get repairs & have a spare tire. Drove west on 88 to the actual pass. Checked a pond right at the pass. Looked like a good spot - small snow pond 15 yds diameter, lots of fallen logs etc. Got nothing. However the water is slightly ~~thick~~ fouled due to litter thrown in by litter bugs. Drove west to 4 mi. E (by Rt 88) 18800 ft., Kibwood, 8000 ft., Alpine Co. Worked the pond cited earlier. Saw 5 small macrodactylum larvae. Water deep, muddy bottom. Could only collect 1 as a locality record. Continued on 88 west to Carson Spur, 8000 ft. Worked a large (60 yd x 30 yd) pond. Bottom very muddy. Many logs in water. Raining again. Neither work in water nor turning logs produced salamanders. Got 1 Thamnophis elegans (ct. temp 16.0°C) swimming in pond. Ned Johnson shot several crossbills here. One lodged in tree. Attempted to knock it down with ~~shot~~ sling shot. All I succeeded in doing was to snap my Schell's thermometer out of my pocket & smashed it against a tree. Left about 3:15 pm. After some more tire trouble & driving only 40 mph we reached Albany about 11:30 pm.

J. D. Anderson
1958

Journal

July 20

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Left Berkeley at 8 am with D. Wilhoft. Drove via usual route arriving at Rio del Mar 10:15 am. The pond is now completely dried up. Spots which were pools last trip (5-July) are now cracked, hardened mud in open areas; softer, moist mud near vegetation.

Worked willow clumps, cattails & tule clumps for newly transformed anurans - saw only Hyla regilla. Spent 2 hours or more at this. After lunch we worked Ellicott ~~willow~~ willow thickets near the pond, each getting three procerus. Behavior of these young anurans is quite different now. When first emerging from water & exposed by turning a log they just sit quietly. Usually will not move unless picked. Now there is a definite escape attempt. 2 of six taken today attempted to escape down rodent(?) burrows. Others sat quietly for 2-3 min then slowly crawled towards some litter. They probably rely on protective coloration just so long, then attempt to reach cover slowly without being seen. Remainder of day spent checking two areas on ridge running SE from Valencia. No luck. Weather was again foggy & cool but not really wet enough to dampen ground.

Aug 2

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Left Albany at 8 am. Arrived Rio del Mar at 10:05 am. Entire pond area now cracked & hardened earth. Worked around willows & tules for 1 hour but found nothing. Drove

Journal

Aug. 2 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
over to "Ellicott" pond after lunch. Worked in same
willow thickets as before. Got 8 juveniles & saw
several more. Soil remains quite moist under logs. The
low hanging branches of the closely set, large willows
provide almost complete shade. Soil cool & moist.
6 croceum (4 taken) seen under peeling bark of a fallen
willow branch. juv. Hyla regilla abundant in this
area. 2 seen under same piece of ~~the~~ bark with Ambystoma
but were several inches from them. Saw Bees
as usual most abundant animal. Two of the
Ambystoma taken under logs which have produced
salamanders three weeks in a row. Ambystoma
are more abundant this time - probably could have
taken a dozen easily. Got 8 & saw 2 others in an
hour's time. Did not look hard after that. More
intensive work in past weeks has produced, usually, fewer
specimens. Next worked around edge of pond area
turning what logs & boards are present with no luck.
Thus far the only success has been in the very
shady willow thicket. At end of pond area,
at base of hill where strawberries are grown there
is a large area of seepage. Water trickles down into
the pond region - probably comes from irrigation.
The pond is about $\frac{1}{3}$ - $\frac{1}{4}$ its former size but still
has plenty of water for this time of year - seepage holds
15" in center along furrows - mostly 4-5" deep. Eleocharis
is very thick - difficult to walk thru. Very few

J. D. Anderson
1958

Journal

Aug. 2 Valencia + area, Santa Cruz Co., Calif.

area of open water - only along the three fences mentioned in earlier notes. 30 minutes of dip netting produced only 25-30 tadpoles of Hyla regilla. Metamorphosed juv Hyla are everywhere on the Eleocharis stalks. Newly transformed Rana aurora are in greater numbers than I have ever seen. There may yet be some Ambystoma larvae in this pond. Water temp 21.0°C in 4" of depth. Not too hot as yet. Most perplexing question - where are the transformed Tigridium. Better than 30 young Proceron have been taken but as yet not a single tiger salamander. Tigridium larvae were exceedingly abundant - still. Out work about 4:30 pm, left with family + arrived in Albany about 7:30 pm - 1 stop for supper, 1 for gas.

Journal

Aug 6

mosquito lakes, 8000ft., 2 mi. W. Lookout Peak, Alpine Co., Calif
Left Berkeley at 3:10 am with Ned Johnson & Dick Banks. Drove to US 50 & then on State Route 4. Arrived at Big Meadow, 6500ft., Calaveras Co., at 7:30 am. Began work for larvae at once. Larvae were abundant close to shore, some in water ca 1 1/2" - 2". Numbers less in water up to 10" deep. Could not see well enough in deeper water to be sure if larvae were present, probably some there but judging from the way numbers fell off in deeper water there would be only few. Worked here to about 9 am & then drove up to Mosquito Lakes, 8000ft., 2 mi. W. Lookout Peak, Alpine Co. Ate lunch early 10:00 am then checked Ponds 1 & 2. Large larvae very abundant & conspicuous in Pond #1. In #2 the small larvae were abundant & as expected no large larvae present. Worked Pond #1 with dip net collecting 12 large larvae in less than 1 hour. Then tried for this year's hatchlings.

Expected them to be easy since they were easy to see in Pond #2. Worked 2 1/2 hours & got 1 larva. Took a break & checked Ponds 3 & 4. Small larvae easy to see in these & no large larvae present. Back to Pond #1, worked 1/2 hour & got 1 more larva. A little later I tried stirring up debris, wood etc on bottom near where eggs were laid (see notes 25 June.) When everything was stirred up I scooped with the dip net. Picked up six small larvae in 30 min. using this method. At 4:30 pm went over to Pond #2 - got 10 small larvae in about 1/2 hour with little trouble. Ate supper & left

J. D. Anderson
1958

Journal

- Aug 6 ~~Mosquito Lake, 8000 ft., 2 mi. W. Lookout Peak, Alpine Co. Col.~~
this spot at 6:30 pm. We made several stops for
collecting between Mos. Lake & Camp Connel. Gassed
up at Camp Connel. Left at about 8 pm. Drove
home by same route. Stopped 3 times to call
for screech owl. Got only 1 answer but did not
get the bird. ~~For~~ Drove rather slowly, looking
for snakes in foothills. Got just 1 Bufo boreas
at 3 mi. W. Copperopolis, Calaveras Co., no
snakes. Saw 4 Horned Owls en route. 1 Gray
Fox crossed the road. Dipsosaurus & Perognathus
out in good number. Warm night with no moon.
Arrived at MVZ 1:50 am. Home by 2:15 am, 24
hours after leaving.
- Aug 7.

J.D. Anderson
1958

Journal

Aug. 20 Trip to Mosquito Lakes, 8000 ft., 2 mi. W. Lookout Peak, Alpine Co., Calif.
Left Albany at 4:50 am. Drove via Tunnel Rd to Pleasant Hill & picked up Tom McIntyre. Drove to Gulchin & then US 50 to Stockton. Took St. Rt 4 from Stockton. Stopped 4 mi ^{west} ~~east~~ of Altaville, Calaveras Co. Collected 2 Sceloporus occidentalis and 1 Rana boylei here. Continued along Rt 4. Saw 1 DOB Charinia bottae approx 2 mi. E. Camp Connell, Calaveras Co., Calif. 10:30 am began work at Big Meadow, 6500 ft., Calaveras Co. The snow pond here is almost completely dry now. Only a small, shallow (5" greatest depth) remnant 15 yds long x 8 yds wide left. Larvae in metamorphic stages present in this pond. Newly transformed juveniles are fantastically abundant under boards, logs, bark & other debris in the pond area. Collected approx 60 in less than a half hour. 11:30 am truck moved east on Rt 4 to Mosquito Lakes, 8000 ft., 2 mi. W. Lookout Peak, Alpine Co. Calif. Ate lunch and began work here about 12:30 pm. In pond #1 both sizes of larvae were abundant & readily visible on the bottom. Last trip (Aug 6) the small larvae were not easy to see or collect. Took a series of both size groups & kept some of larger ones alive for experimental work. In pond #2 small larvae only present & there in very great density. Took a sample of these 20+ pickled & 20 kept alive. Took a small sample from pond #3. Larvae were not as

J. D. Anderson
1958

Journal

Aug 20 Trip to Mosquito Lake, 8000 ft., 2 mi. W. Lookout Peak, Alpine Co., Calif
abundant here as in Pond #2. Tom McIntyre collected a
nice series from pond #4. He said that the larvae
were extremely abundant there & that tadpoles of
R. muscosa were more common than in other
ponds. I found more muscosa larvae in pond
#2 than in 1953. However adult R. muscosa
were most common along shores of Pond #1.
Again we found no adult Hyla regilla &
saw very few regilla larvae. The day
was warm, bright & extremely clear. Saw 1
Thamnophis e. elegans in pond #1, no others.
Left about 4:30 pm headed for home. Lte in
Angel's Camp. After return via same route &
a stop at MVZ I arrived home at 11:00⁺ pm.

J. D. Anderson
1958

Journal

Aug 29 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Left Albany at 7:25 am. Arrived Valencia 9:35 am.
Worked around pond area, which is now completely (dead)
dry, for newly metamorphosed Ambystoma. Checked in
Tule & Cattail Thickets with no luck at all. Worked
the several willow thickets & got one in the central
thicket. This juvenile was under a fallen willow
branch which had one end buried in damp soil. Searched
under bark, logs etc. with no further luck. Left
Valencia at 11:40 am. Ate lunch & then began work at
Ellicott Pond area (2 mi. NW Ellicott RR Sta., 4 mi. W
Watsonville). The pond here is all but completely
gone now. All that remains is the 3 parallel ditch
like depressions. From 3-6" of water remains in each of these.
Newly metamorphosed Hyla regilla & Rana canora very
common along edges of these ditches. No tadpoles seen
in water - this may indicate that water now gets too
warm for amphibian larvae. Eleutheris extremely thick
all throughout pond area. Worked in the willow clump
for 2 1/2 hours. Got 13 juv. A. macrodactylum. 5 came
from under loose bark on & fallen, dead willow
branches; 3 from inside a dead, rotted log & the
remaining 5 from under logs on the ground. Soil still
moist & cool under logs. Air temp in shade of willow
22.2°C. Foggy all morning but sunny after 2 pm.
at 3 pm I drove to Arroyo & checked a Taricha
locality there. This pond still intact. Turned logs
under willow thicket but with no luck. Next drove

J. D. Anderson
1958

Journal

Aug. 29 Valencian Lagoon, Rio del Mar, Santa Cruz Co., Calif
thru town of Arroyo, taking Carpenteria road
out to Salinas - Watsonville Rd. West on this.
checked a large, permanent (probably artificial)
pond near Arroyo turn off. Pond literally
celine with Rana catoblepina. Turned logs
for 20 min. with no luck. Drove back to US 1,
then south to Elkhorn Rd. Checked willows
along a pond (?) (perhaps upper end of Elkhorn
Slough). Again no luck. On way back to
supper I stopped at the Edwards farm. Mr. Edwards
is on vacation. Got permission to do night work
at Ellicott Pond from his caretaker. This man
told me of a pond along Green Valley Rd (near
Freedom) where he used to catch salamander
larvae by hook while fishing (could be A. tigrinum).
Ate at Red Door Inn, then wrote notes until dark. Worked
Ellicott Pond edge & willow area with Coleman lantern
from 8:10 pm to 9:40 pm. Sky clear, stars bright.
Moon came up about 9:15 pm. Hyla regilla juveniles
were hopping about in Ellicott's & under willows -
very abundant. Rana aurora juveniles out also but
only a few individuals seen. Air temp 1" above surface
of ground 15.6°C. Got 1 cremna wandering about
at edge of willows - about 30 yds from edge of
pond area. Left for home at 10 pm. Traffic heavy
from San Mateo on. Arrived MVZ about 12:30 am.

J.D. Anderson
1958

Journal

Sept. 13

Valencia Lagoon + Elliott Pond, Santa Cruz Co., Calif

Left Berkeley at 8 am with D. Wilhoft. Drove via usual route to Rio del Mar. Valencia Lagoon area is now very dry. Search for Ambystoma was fruitless. A new home is being built at the junction of Hill Rd + Bonita Drive. However, surely the study area is being ruined + croceum moves closer to extinction.

After lunch drove over to ~~the~~ the "Elliott Pond" -
1/2 mi. NW Elliott Rd Sta., 4 mi. W Watsonville, Santa Cruz Co.

A thorough search of the willow area produced 11 croceum, including at least two adult animals (judging by size). One of these is definitely a ♂ with an enlarged cloacal area - vent region enough different to distinguish it as a ♂ but not swollen of breeding season. Worked until late afternoon getting temp data & soil samples. In the evening work with Coleman lantern was negative. A bright, dry night - stars shining.

J. D. Anderson
1958

Journal

Sept 23

Mosquito Lake, 8000 ft, 2 mi. W. Jacobson Peak, Alpine Co., Calif.
Left Albany at 5:25 am. Drove via US 50 to
Stockton + then on State Rt 4 towards Elbert Pass.
Ran out of gas about 3 mi. W. Altaville. But got
a quick ride in for gas with a Mr. Monteverde.
Lost little time. Arrived at Big Meadow, 6500 ft,
Calaveras Co. at about 9 am. Pond is entirely
dried up (see notes Aug 20, 1958). Ground wet
from rain last night. However it was very
dry under all litter, logs etc. Searched for
juvenile Ambystoma for quite a while with no
luck at all. Probably all have moved down to
escape dessication. Even most favorable areas
are bone dry. It is cold today 9.5°C. but I
doubt that this is a factor. The past few
weeks have been extremely warm + dry. Drove to
Mosquito Lake locality. Ate lunch at 11 am.
From about 7400 ft up there is a slight
cover of snow on ground - almost 1" in some
places. Snow on all limbs of trees. All the
higher peaks all around this spot. Air
temp. 2 ft off ground 10.0°C., temp 1" above
ground 7.5°C. Many of the shallow areas of
the pond here are covered by a thin film of
ice. Must have been a miserable night last
night. Sky very cloudy. It may be snowing
on some of the higher peaks right now +
will probably snow here tonight. Night

J.D. Anderson
1958

Journal

Sept 23

Mojito Lake, 8000 ft., 2 mi. W. Lookout Peak, Alpine Co.
Temps must drop pretty low ~~but~~ fairly regularly now. I would imagine that all the ponds will last thru the entire year now all have plenty of water. This years larvae show no signs of metamorphosis. In pond #1 all of the 1957 larvae are metamorphosed and gone. The 1958 larvae are very difficult to collect. Tend to stay hidden in the litter. Overcast sky, wind & drip from the trees make work more difficult. Finally got a series of 1958 larvae from Ponds 1, 2 & 3. Saw abundant larvae in Pond #4 but did not take any. Water temps ranged from 5.3 to 6.0 °C. In open ponds (2 & 3) the larvae are easy to see & catch. But where there is litter they tend to hide. Reminds me very much of the first days collecting this June when the 1957 larvae were first emerging (see notes for June 1958). Saw only two juv. Rana muscosa, & no Hyla regilla. Almost too cold for frogs already. Hyla although present here, are not very abundant. Large E. muscosa larvae in Ponds 3 & 4. Saw only few in Pond #2 & more in Pond #1. None of those seen were transforming. Left early & arrived home about 9 pm.

J. D. Anderson
1958

Journal

Oct. 11 Valencia Lagoon, Riddel Mor + "Ellicott", Santa Cruz Co., Calif.
Left Berkeley at 8 am with D. Wilhoft. Arrived
Valencia 10:30 am. Checked around pond area + in
oak woods for croceum with no luck - same old
story here. Ate lunch + dropped D. off at ^{Mariposa} ~~Mariposa~~
Beach. Worked at Ellicott getting 2 croceum in 1 hour.
It was cold on beach so D. joined me collecting. In
afternoon we picked up 12 croceum (total), several
of which appear to be adult males. A cold + foggy
afternoon. Ate supper at Red Door Inn then did some
work with Coleman Kontum. No luck. Left at 9:30
pm + returned to Berkeley ca midnight.

Oct 18. Valencia Lagoon, Riddel Mor and "Ellicott", Santa Cruz Co., Calif.
Heavy rain in Bay Area between 3:30 + 5 am this morning.
Weather Bureau predicted more rain for afternoon +
evening of Oct. 18. Decided that this might turn into
the first big rain + that the Amegastoma might
move with it, so I left Berkeley at 1 pm. +
drove via usual route to Aptos. Stopped at Red
Door Cafe to check with Barney Neal on last
mites rain. He said it rained hard + heavy for
1 1/2 hours in morning. At 3 pm. sun was
shining brightly - no sign of the predicted
rain. Drove to Valencia Lagoon. Checked all logs
in willow area + made a cursory check in
oak woods. Ground damp in places. Still dry
under trees + soil under logs unmoistened by

J. D. Anderson
1958

Journal

Oct 18

Valencia Lagoon, Rio del Mar + "Ellicott", Santa Cruz Co., Calif.
This morning rains. No response by the salamanders.
Found nothing. Drove over to "Ellicott Pond".
1/2 mi. NW Ellicott RR Sta. 4 mi. W. Watsonville, Santa Cruz Co.
Worked here for 1 1/2 hours. Turned up 10 crogeus
which is about the same number / hr. we have
been getting all summer. Basis of this I would
say that there was no response by these animals
to the rain. Of the 10, 3 were collected for study &
7 were toe-clipped + released. Ate supper between
5:45 + 6:30 pm. Returned to Ellicott at 6:45 pm -
completely dark - although stars shone brightly &
sky was very clear. Worked for 2 hrs with
Coleman lantern but saw no salamanders. Juvs.
Hyla regilla + subadult Rana aurora were
quite active after dark. Hyla seen on logs &
hopping over dry ground. Rana on ground only.
Isopods *, Carabids, Tenebrionids + millipedes were
active on surface. Stopped work at about
9 pm + drove home.

Nov. 15. Valencia Lagoon, Rio del Mar + "Ellicott", Santa Cruz Co., Calif.
Left Berkeley at 8 am. Arrived Rio del Mar at
10:30 am. Bounta Dr. wet, several small
standing puddles present. Worked the willow
area, turning logs + checking thru leaf litter. Found
nothing. Leaf litter only moist at surface. Dry under
logs + 1" in litter. Heavy canopy must keep the
light rain from penetrating very deeply.

J.D. Anderson
1958

Journal

Nov. 15

Valencia Lagoon, Rio del Mar "Ellicott", Santa Cruz Co., Calif.

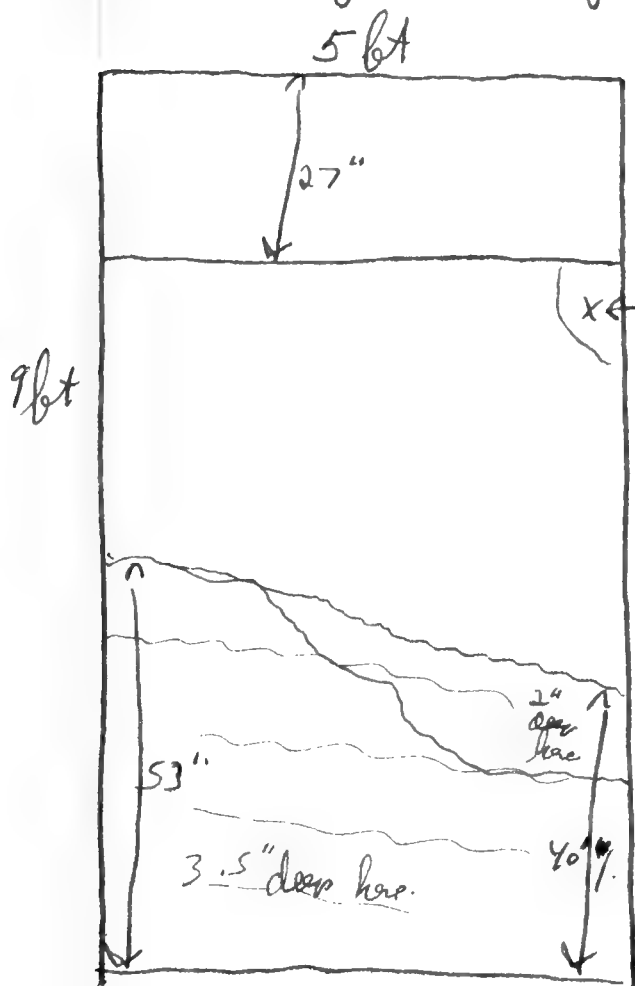
Checked next in oak woods, finding much more moisture here - due to stone runoff probably. Found no salamanders except 1 Ensatina which had fallen into Can trap #1 + drowned. 1 Sorex townsendi in same can - also drowned. After lunch I drove over to "Ellicott Pond" - 10 mi. NW Ellicott RR Sta, 4 mi. W. Watsonville, Santa Cruz Co., Calif. Worked here for quite a while. Picked up 7 croceum - 2 possibly breeding adults. Took temp data + soil samples. Next worked an Ambystoma tigrinum locality between Ellicott + Valencia. Hoped that some juv. tigrinum might be out but drew a complete blank on that score. Ate quick supper + returned to Valencia at 5:30 pm - Began Road checks at 5:45 while sky was clear + starry. At 6:10 pm it began to rain lightly. And at 6:20 pm 1 juv. croceum was collected as it walked across road (headed due S by compass) from pond towards woods. Air temp at 1/4" = 7.4°C. Saw 1 B. attenuatus at 6:30 pm. At 6:35 rain stopped. Made 5 more road checks but saw no more Ambystoma. Got 1 Aneides lugubris on the Hill road, on the leaf covered road cut. Next checked Ellicott area with lantern - again no luck. Sky clear - moon + stars out. No Hyla out - may be too cold for Ambystoma.

J. D. Anderson
1958

Ambystoma macrodactylum croceum

Jan 9 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

9 ads. collected in a man-made pit in oak woods. This pit - apparently dug early this fall - is next to a new dwelling + is intended for a cess pool. It is 9 ft long x 5 ft wide with straight sides and ~~up~~ 4.5 ft in depth. A perfect pitfall for amphibians. At one end there is a small pool of water extending width of ~~pit~~ + as much as 53" in length (shorted length - 40"). Greatest depth of water 3.5", average about 2 1/2". At opposite end from pool is a slightly raised shelf - 27" in length + extending width of pit (5 ft).



x 9 Ambystoma found in depression here.

House.

Baccharis

J. D. Anderson
1958

Ambystoma macrodactylum oregonum

Jan. 9 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.



Temp. $\frac{1}{4}$ " above surface of pit bottom - 7.4°C .

Humidity readings (\bar{x} sling Psychrometer)

Over pool.

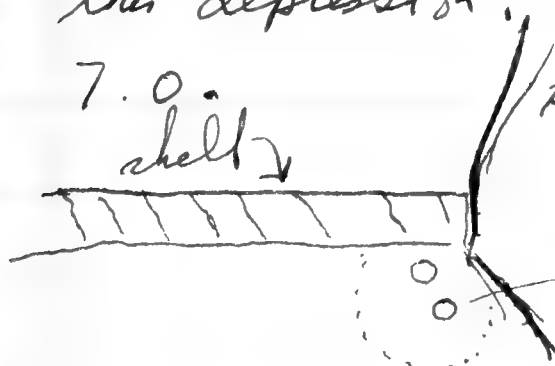
over Ambystoma.

Surface of ~~pit~~ ground in pit moist but not wet. Water cannot be squeezed out of soil most places. However just below level of shelf, it becomes more moist. The Ambystoma were found at the foot of the shelf in a cup shaped depression. This pocket was roughly 3" deep & $2\frac{1}{2}$ -3" in diameter. It was sealed off at top - open only by 2 holes 1" apart each about $\frac{1}{2}$ " in diameter. When discovered a Hyla

J. D. Anderson
1958

Ambystoma m. croceum

Jan 9. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
regilla was sitting partly exposed in one of the
holes. The Ambystoma were in a ball & facing in
no one particular direction. The sandy soil
was here, very moist & indeed there was a film of
free water in bottom of pocket. Sand in this area
had enough water to squeeze out. The Ambystoma
were all in fine shape as contrasted to Ensatina
found on surface. These were very dessicated —
see Ensatina notes 9-Jan. Temp. just outside
pocket at surface of soil = 7.4°C . Temp 2"
below surface - approximating level of Ambystoma
= 6.2°C .

Cl. temps of A. m. croceum taken from
this depression: 7.0, 7.0, 7.0, 6.8, 7.0, 7.2,
7.0.
shells / side of pit


This pocket was obviously of great value for
survival. The Ensatina which were excluded
from it were in bad shape from dessication. In
fact they did not even gain wgt. when brought
back to laboratory. Did the Ambystoma keep
the Ensatina out. I'd say yes! There was a
little more room in it & 1 ad ♀ Ensatina
was sitting at edge, she was in bad shape.
Something about presence of Ambystoma kept her

J. D. Anderson
1958

Ambystoma m. croceum

Jan. 9. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
out - so too for the other four badly desiccated
Eusakia. One can't be sure whether or not
the Ambystomas did any digging. It looks
as though the pocket had formed by drip action
of runoff & the salamander moved in. If they
had dug it why aggregate?? Why not each
dig his own. I think there was a hole already &
they moved in. Interesting as concerns competition.
Ambystoma could survive a long while here
but Eusakia were at death's door. Thus there
was one favorable spot - occupied by A. m. c.;
Eusakia excluded (& die). Thus this would be
mortality independent of density. 1 or 20
Eusakia would be in same predicament.

2 other Ambystoma were found in the pool.
These had cl. temps of 6.2° & 6.4°C . Both
 $\sigma\sigma$. Water was muddy, cold 6.0°C and full
of Hyla regilla.

Interesting that there were no Aneides or
Batrachoseps in pit. I think Aneides would
be capable of climbing out. Probably Batrach
do not move enough to fall in.

Temp. surface of ground adjacent to pit =
 13.4°C . Humidity =

J. D. Anderson
1958

Ambystoma m. croceum

Jan 9. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

1 ad. ♀ collected under large piece of stone 20" x 20".
♀ gravid, cl. temp. under rock 6.8°C. ♀ was
hiding in old mammal burrow + disappeared into
closed portion of it when disturbed. She was
next to wide portion (nest?) of burrow, which
was littered with cuttings of Eleocharis + other
marsh plants. Surface temp. outside rock
13.8°C. Sky partly cloudy. Time 11:45 am

Jan 23 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

3 ad. ♀♀ marked + released on Bonita Rd. between
12 midnite + 1:15 am. 3 road checks were made in
heavy driving rain storm. Not in succession - 12 - 12:30 +
12:50 - 1:20. All 3 ♀♀ gravid with eggs visible thru
abdomen and all facing pond area, coming from
woods. Cl. temps 8.0, 8.6 + 8.0. Temp. 1/4" 8.6, 8.8 +
8.6.

Jan 24 4 ad. found in pit (described notes of Jan. 9.), 9 am.
3 ♂♂ + 1 ♀. Cl. temps - 6.8, 6.8, 7.2. Temp. under
small board where they were found 7.0°C. All in
prime breeding condition. Must have fallen in
pit since Jan. 9. 1 ♂ was recaptured of animal
marked Sept. 19, 1957. All 4 released at junction
Bonita + Hill roads. Raining hard all night and
still raining.

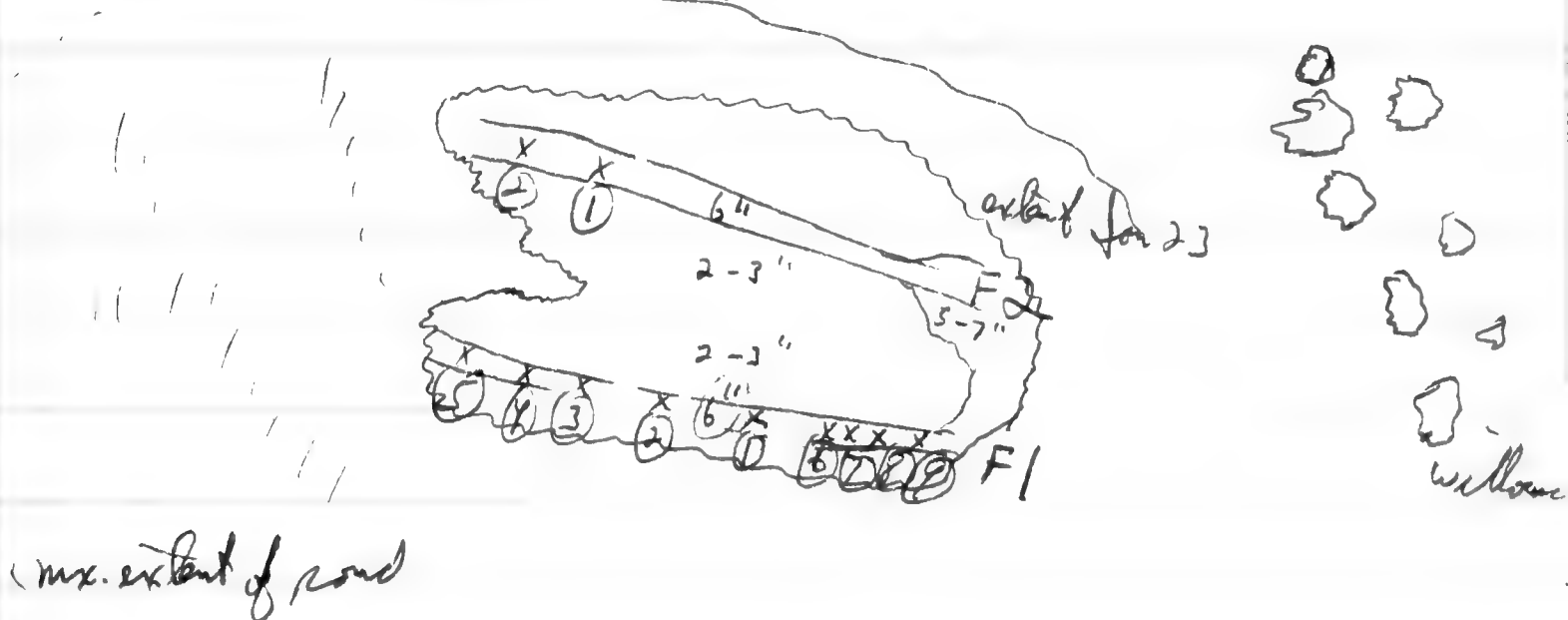
Jan 24 1/2 mi. NW Elliott R.R. Sta, 4 mi. W. Watsonville, Santa Cruz Co.

11 traps set in this (Elliott) pond at 10:00 pm
last night. Checked at 10:00 am. All traps

J. D. Conderson
1958

Ambystoma m. croceum

Jan 24 1/2 mi. NW Elliott R.R. Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif.
set in the two deep furrows which run the length
of the pond. 8 in furrow #1, 2 in furrow #2. 6 ♂♂
taken from Trap #1 (large trap) all in prime breeding
condition. In 6" of water, trap on bottom choked with
dead Eleocharis + new shoot. Cl. temp. 10.2, 10.2,
10.4. Temp of water at trap level. 1/2" from bottom
10.2°C. Trap #5 had 1 ad. ♂ croceum, cl.
temp. 60.2°C. Trap #2 in furrow #2 had
2 ad. ♂ A. tigrinum + 1 ad ♂ croceum. All
three were unconscious + looked dead. On removal
they had no righting reactions. After 10 min. all
3 showed feeble gular pulsations + 30 min later
all 3 revived. They may have come close to
drowning since trap was under water but
probably knocked selves out with poison secretion.
Worked then thoroughly upon removal. ♂
Interesting that all Ambystoma were ♂♂ +
that they tended to aggregate.

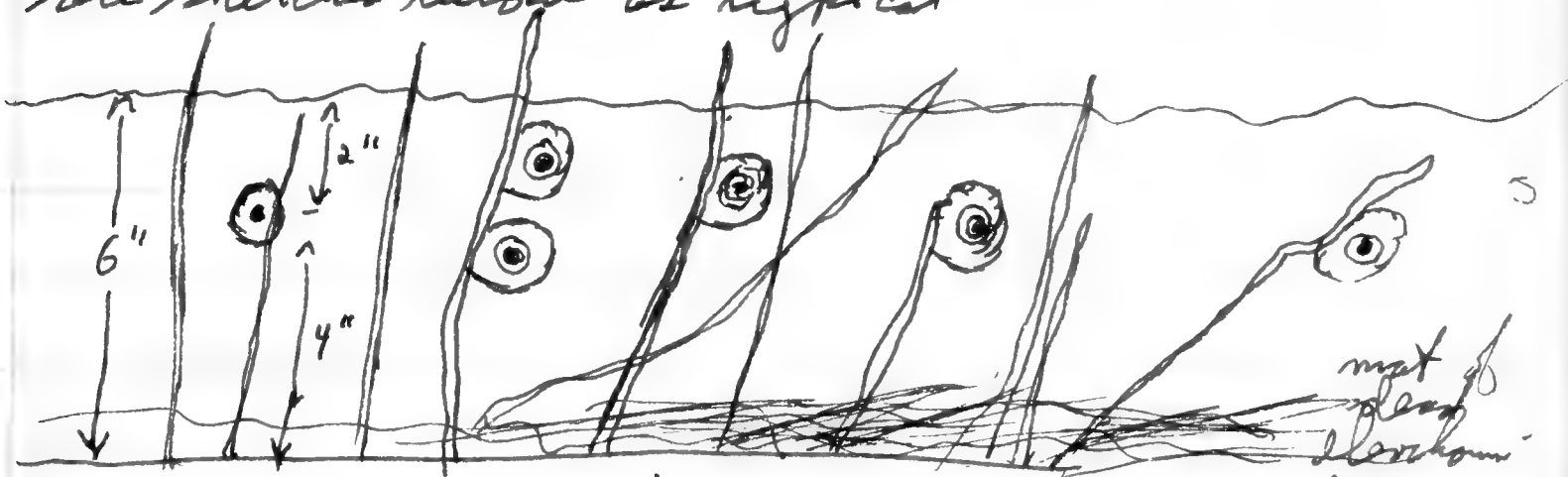


J. D. Anderson
1958

Ambystoma m. croceum

Feb. 9 $\frac{1}{2}$ mi. NW. Ellicott R.R. Sta, $\frac{1}{2}$ mi. W. Watsonville, Santa Cruz Co., Calif.

(11:15 am) Ellicott pond is at maximum size. Eleocharis shoots coming up in shallow water near edges. Found about 50 eggs of croceum along SE border of pond, adjacent to willows. Eggs laid in shallow water 4-8" deep. All laid singly on living & dead shoots of Eleocharis. Usually only 1 egg per shoot but found as many as 3 per shoot. When in $\text{F} 2's$ & $3's$ the eggs were always separate, never found outer jelly coats fused. Usually well spaced, at least 3" between eggs. There were "centers of deposition" however, where one might find 6-8 eggs in an area 2 ft sq. Then several feet away there would be another similar area, as though the F kept moving while depositing eggs. Eggs almost always laid well off the bottom towards the top of a shoot, sometimes right at top of shoot & rarely closer to bottom than to the top. Several are sketched below as typical



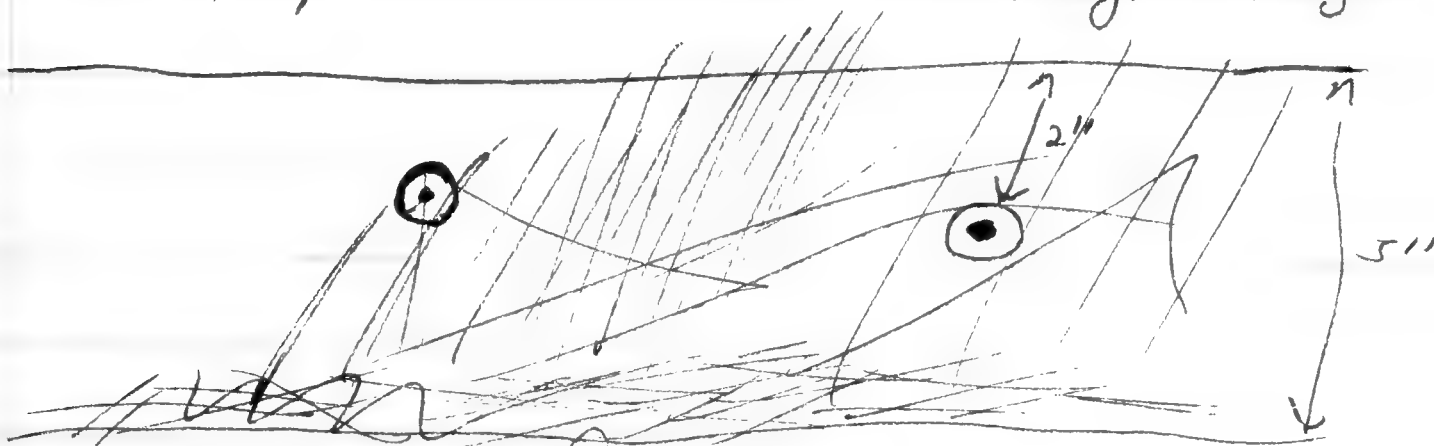
All () eggs in neurula (), neural bulb almost completely closed (st.). Water temp. 16.0°C for almost all eggs. 1 batch (6 eggs) at 13°C . Temp. taken at level of eggs.

J. D. Anderson
1958

Ambystoma m. croceum

Feb. 16 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

Several eggs found in 5" of water at S end of lagoon. Much dead & living (shoot) of Eleocharis. Water temp - 17.2-17.6°C. Water very muddy -



almost impossible to spot the eggs. Eggs in late incubation. Time 11 ~~pm~~ am.

Several more found in water 1-3" deep - 1 ft from S shore of lagoon. Same situation, Eleocharis shoots coming up thru dead stalks. Water temps of 23.2 + 23.0°C recorded at 2" (2 pm). This spot gets ~~late~~ sunlight until late afternoon.

Feb. 16. ~~Ellicott Pt~~ 1/2 mi. NW Ellicott Pt Sta, 4 mi. W Watsonville

Checked sites of egg deposition observed on Feb. 9. Found no eggs with embryos but saw many jelly capsules which had recently hatched. Judging from lab experience these had hatched within 2 or 3 days.

March 4. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

Checked eggs sites of Feb. 16 along S edge of lagoon. Larvae in process of hatching. One hatched while being handled. Several eggs found in 4" of water 5 ft from edge amongst Eleocharis. Water Temp 12.0°C. - 11 am.

J. D. Anderson
1958

Amelastoma m. croceum

March 18 Valencia Lagoon, Rio del Mar, Santa Cruz Co, Calif.

Worked West end of pond extensively for larvae between 12:30 pm & 4 pm. Started along SW edge where eggs were discovered on Feb. 16 & March 4.

Found nothing in shallow water near edge where there was no Eleocharis. Got 1 larva in clump of Eleocharis 8 yds from shore line. Depth 8 1/2", Temp surface 23.2°C, Temp. bottom 18.0°C. Bottom hard - not muddy, 1/2" layer of dead Eleocharis stalks on bottom. Eleocharis growing rapidly - some situation where eggs were found. Water soiled, muddy colored - no visibility at all. Time 2:45 pm. 1 egg - c larva well developed & ready to hatch found in same situation today.

2 sm. larvae taken in middle of W. end of pond - opposite shore up road cut. 25⁺ yds from either shore. Water depth 11". Temp. surface 19.5°C, Temp. bottom 14.5°C. Bottom hard - no mud. Eleocharis stalks 1" thick layer on bottom. Water muddy, soiled - no visibility.

Time 3:10 pm. Water 8-10" deeper all around this spot. No Eleocharis in deeper water. Thus it probably is a combination of depth & cover providing suitable habitat for small larvae since Eleocharis is main plant & it seems only to grow in shallower places.

4 pm set 12 funnel traps along SW edge of pond, near spot where earlier eggs &

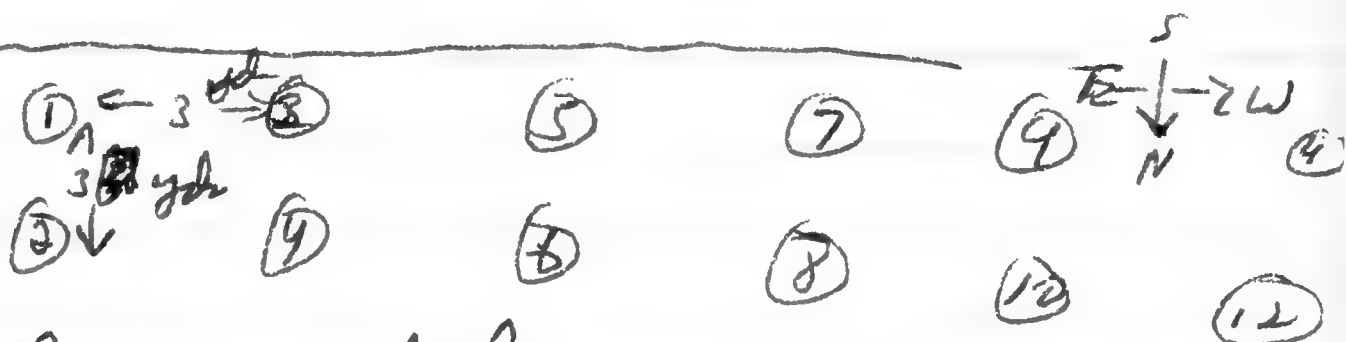


1

J. D. Anderson
1958

Ambystoma m. croceum

March 18 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.
Today's larvae come from. Set out as shown below.



~~3 ft below~~ 3 yds between each trap & next.
Checked traps at dusk 6-6:30 pm. No
salamanders. Got 12-15 Hyla tadpoles -
several Coxidae & notonectids, several snails &
large ostracods.

March 19 Checked traps 8 am this morning & got same
results. Final check at about 5 pm. - still
no Ambystoma.

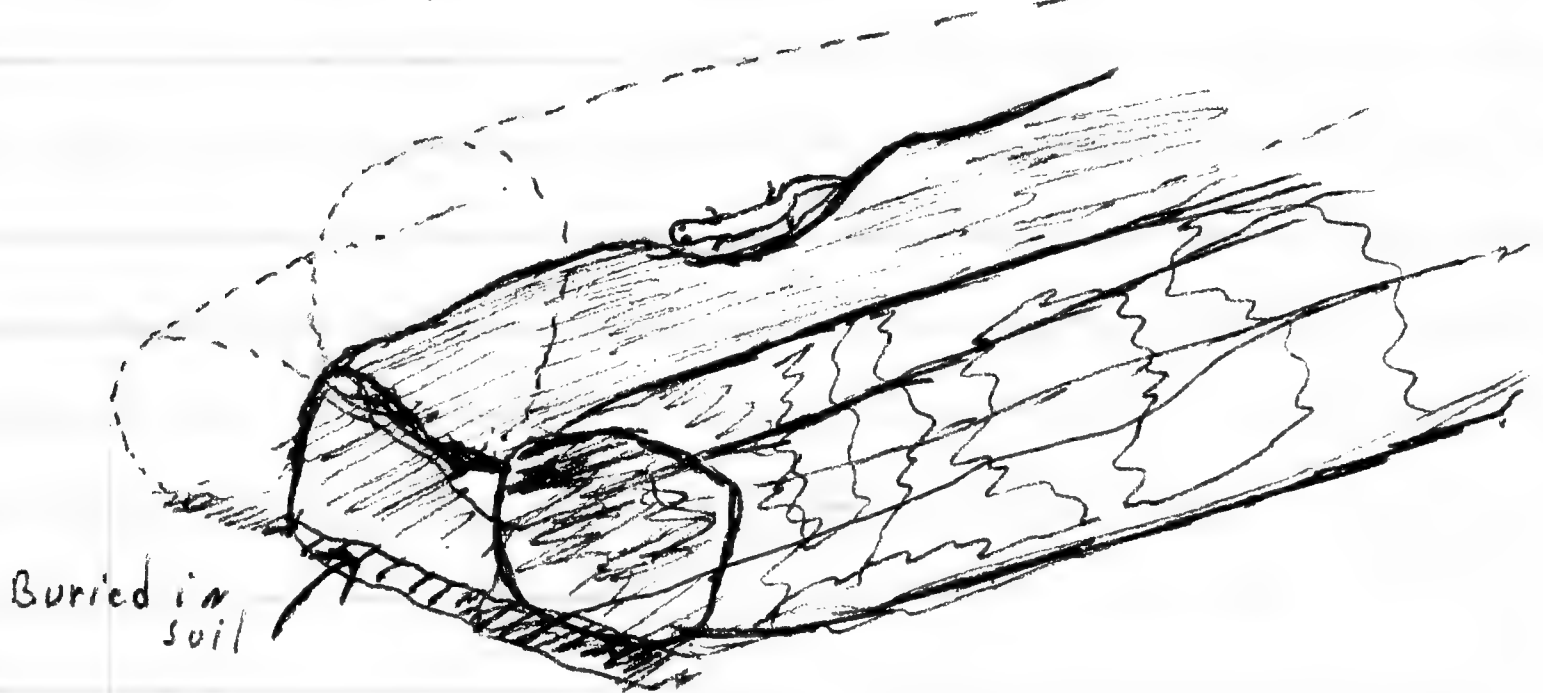
March 19 1/2 mi. NW Ellicott Pk. Sta, 4 mi. W. Watsonville, Santa
Cruz Co., Calif.

Worked over several old wood piles stacked for
at least 5 years in clump of willows just
SE of Ellicott Pond. Moved several hundred
pickets & logs. Found 2 ad. ♂♂ close to
bottom of pile. 1st found at 11:30 am under large
log 4' x 2' x 1' at edge of wood pile. Cl. temp.
13.5°C, temp under log 13°C. Small willow
shades logs here almost all day. Log has not
been moved for years - sunk into ground 2".
Actually a film of water on soil. As soon as
log was turned the salamander dashed to

J. D. Anderson
1958

Ambystoma m. croceum

March 19 $\frac{1}{2}$ mi. NW. Ellicott Lk. Sta, 4 mi. W. Watsonville, Santa Cruz Co.
the opening of a burrow (*Microtus*?) + almost
scored - well used escape route (?) 2nd taken
well into wood pile. Very moist between logs.
Much litter + rotted wood between logs. This
animal not on soil but in a niche but slightly
12:15 pm longer than its body 1" from free water on
soil surface. When logs disturbed this salamander
pulled back further into its niche + remained quiet.
Cl. temp. 11.8°C , temp in depression 10.0°C . From
the look of this spot - well shaded, sandy loam
soil with good moisture - I would judge that it
would be favorable for a summer retreat.



dotted out lines = other logs removed to
expose *Ambystoma*.

Actually a layer of 4-5 logs overlying the salamander.
1 *Aneides* *luzoniensis* found in upper most layer
directly above *Ambystoma*.

J.D. Anderson
1958

Amblystoma m. croceum
larvae.

March 19 1/2 mi. NW Ellicott R.R. Sta, 1 mi. W. Watsonville, Santa Cruz Co., Calif

Series of 8 collected along W + SW edges of Ellicott Pond. These had total lengths as follows 31, 29, 34, 58, 43, 47, 40, 43. ($\bar{x} = 41.25$) They were collected between 3 ft + 15 ft of shore in water of 16" - 21" deep. Bottom firm, not muddy in all instances. Elodea growing profusely at all capture sites. Temps at surface of water varied 18.6°C - 20.0°C. Temps at bottom (actual capture) between 16.0°C - 19.0°C. Water relatively clear in all instances. Time 3 pm - 4:15 pm. Sky clear, sunny & warm.

April 11

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Check made for larvae along SW corner of pond using long handed dip net. Netted 16 in 1 1/2 hours - between 11 am + 12:30 pm. Time includes note taking, temp recording etc. & is not bad time at all. In total length they measured: 29, 21, 26, 28, 20, 32, 21, 26, 29, 36, 31, 26, 26, 27, 36 (430?). $N = 16$
 $\bar{x} = 27.60$ range 20-36.

April 26. Valencia Lagoon

Check made for larval growth - some area by sampled as before. 15 taken with dip net 2 with means of traps. Total lengths (mm) 42, 43, 52, 44, 45, 50, 55, 47, 43, 48, 50, 60, 41, 43, 45, 52, 46. $N = 17$
 $\bar{x} = 47.41$. (Range 41-60)

J.D. Anderson
1958

Ambystoma m. croceum

March 21 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
1 ad ♀ (gravid) collected at 8 pm crossing
sandy road (Bonita Dr.), moving from oak woods
towards Valencia Lagoon. Cl. temp. 11.5°C , Air
temp $1/4"$ 11.6°C , soil temp 11.8°C . Had been
raining up to 15 min. ago. Sky dark - no
stars.

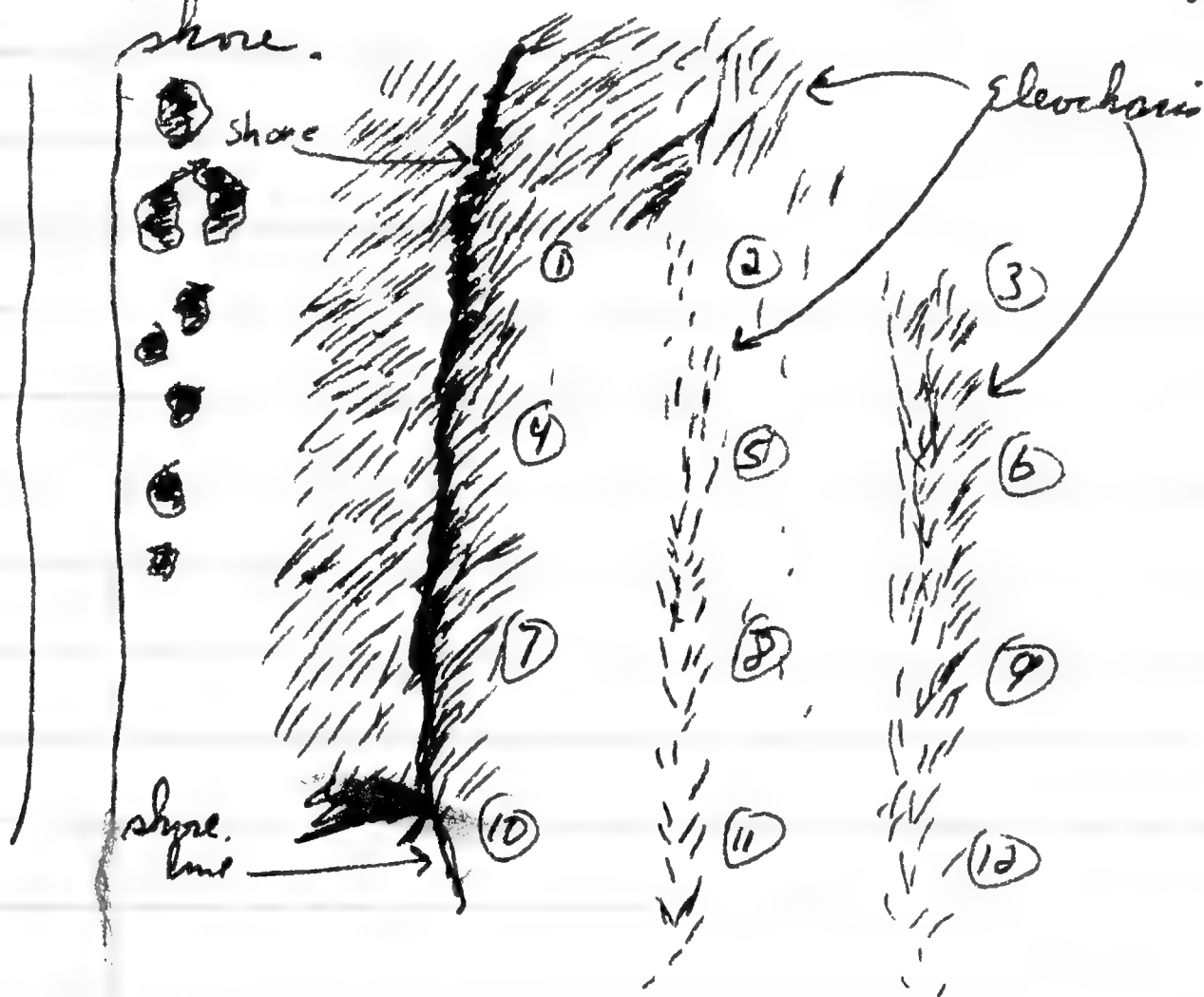
Humidity data 92% R.H. - Sling Psychrometer

A.D. Anderson

Ambystoma m. croceum
larval traps

April 26. Valencia Lagoon Rio del Mar, Santa Cruz Co., Calif.
Set out 12 funnel traps along edge (see map April 26) of pond where I have been measuring larvae. A grid set up with traps 5 paces apart parallel to shore line and beginning 5 yds from shore.

Baccharis



Set up complete at 1:30 pm. (PST). Checked at 5:30 pm - no salamanders. Checked again at 9:30 pm - no 1 A.M. croceum larva in Trap # 9.

April 27 Checked traps just after (no sun on pond) dawn at 6:30 am (PST). - 1 larva in trap # 5. This 52 mm in tot. length. Marked - LF leg cut off & a notch put in dorsal tail fin little behind hind limbs. Larva in trap # 9 had escaped. Made a quick check of traps at 8:30. No salamanders. Final check & pick up at 1:30. 1 croceum larva in trap # 8.

J. D. Anderson
1958

Ambystoma m. cretum
notes on pond.

April 26 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Water has receded very little as yet. Eelochani still confined mostly to SW corner of pond. A good area developed there with disjoint patches along S side of pond. Potamogeton green now, Typha coming in line also. Mallard pair still present & active. At least one pair of coots using pond. Thought I saw a Pied-bill Grebe - not sure. Did see one last trip. A pair of Green Herons flushed from central part of S. shore. These may be predators. Snakes active for first time. Saw a Thamnophis amongst Eelochani. Probably working the area for Hyla tadpoles & newly transformed individuals - probably take any Ambystoma they can get.

In water there seems to be a slight decrease in invertebrates. Saw fewer Corixids & notonectids this time. No Fairy shrimp at all. However the large Conchostracans are way up in numbers. Ostracods on other hand appear to be down considerably.

1958

B

Ambystoma m. croceum
larvae.

may 17

Valencia Laguna, Rio del Mar, Santa Cruz Co., Calif
Check made for larvae all around pond. SW
corner too shallow for good netting. 12 taken with
dip net. Total lengths (in mm): 68, 61, 80, 73, 81, 81,
70, 65, 58, 56, 61, 51. $\bar{X} = 67.08$ (51-81).

J. D. Anderson
1958



A. m. croceum larva

A. m. croceum larva
Total length -
collected 19 March 1958^{mm}
"Ellicott" Pond.

mouth and throat



from 2 to 10

10 mm in length

E

mouth and throat

mouth and throat

mouth and throat

mouth and throat

as in 1000.

J. D. Anderson
1958

Ambystoma m. croceum

Notes on newly metamorphosed juv - Ellicott Ponds.
June 20. 1/2 mi. NW Ellicott RR Sta. 4 mi. W. Watsonville, Santa Cruz Co., Calif

Notes made June 23.

SV 46.9 Tail 48.7 Total. 99.6

to 2. 4. 5.

Dorsal ground color - as in orig. description.
Dorsal markings - fragmented as in orig. not yet
consolidated. No true spots as in orig. spec.

Guanophore - ~~juv~~ & scattered melanophores. Scales
Red - brownish on sides.

 - melanophores
ventral midline.
- melanophores - scattered
abundant.

under skin head - lots in head
Gen. scattered granules, etc.

Below 2. fine network of melanocytes - in
~~part~~ contracted state Color a dark black
color.

Underside of tail same.

J. D. Anderson
1958

Ambystoma macrodactylum croceum

June 20 1/2 mi. NW. Ellicott RR Sta, 4 mi. W. Watsonville, Santa Cruz Co., Calif.

1 newly metamorphosed juv. collected under rotted willow branch $\approx 1/2$ ft x 10" lying on moist soil in Willow thicket. Cl. temp. 16.2°C ., temp under branch 16.0°C . Branch lying alongside large, dead willow trunk + next large living willow. Canopy cover 70-80%, 20-30 yds to pond edge from here. 31-may the water was only 8-10 yds from this log. This animal has tiny gill stubs remaining. Dorsal color black with faint pattern elements showing. Underside light as in larvae. Tail with no trace of fin - much like adult. No defense reaction.

Sample of soil from under log taken back to MVZ. % H_2O determined by wet weighing - dry weighing. Sample weighed put in oven for 30 min - reweighed. 30.82 % H_2O in soil sample.

June 20 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
8 larvae measured in field $\bar{x} = 82.12$ mm tot length.

June 28 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
1 large larva collected with dip net in 6" of water at edge of bloating mass of Potamogeton, 10 yds from large clump of tule. Water temp 22.0°C .

June 28 1/2 mi. NW Ellicott RR Sta, 4 mi. W. Watsonville, Santa Cruz Co., Calif.
8 newly metamorphosed juveniles collected under rotting willow logs between 60 + 90 ft from edge of receding pond. Ground very dry between logs but sandy loam under the logs was moist, though not as moist as soil

J. D. Anderson
1958

Ambystoma macrodactylum croceum

June 28 1/2 mi. NW Ellicott Bl. Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
under logs closer to water. These juveniles must have
dispersed on a wet, foggy night!! Soil samples
were taken from under logs (for first 7 animals only). Taken
back, weighed & dried to determine % moisture in soil.
Following percentages recorded

Temp. data for same animals respectively; ~~temp.~~

cl temp.

temp. under log.

20.4°C

20.0°C

21.0

20.0

20.8

20.0

19.6

19.8

22.4

23.0

22.4

22.0

21.4

21.0

19.2

19.2.

Time: 3:30 - 4:30 pm. Sky clear, bright sun. Canopy
varied from 5% - 30% but most open. Logs
varied from very small - 1 ft long, 2" diameter to
9 ft long, 1 ft diameter. All soil was sandy
loam, no vegetation, few roots. Caught 2
shrews under a log 5 ft from a log which
produced 2 young croceum. Shrews on L.

. Most probably a predator. Mole workings
under some logs - another likely predator.

J. D. Anderson
1958

Ambystoma m. croceum

July 5 Valencia Lagoons, Rio del Mar, Santa Cruz Co., Calif
2 newly metamorphosed croceum taken in a thick
clump of Tule. Clump so thick
that they had to be stamped down in order to work. Very
well shaded + moist on bottom. 4" of water were standing
in clump on June 28, no standing water now. Soil
muddy - water easily squeezed ~~by~~ from it. Salamanders
taken in a pile of dead tule stalks. 1 was 3" from
bottom of 12" pile. Other was on substrate. 1st had
cl. temp. of 15.8°C , temp of pile 15.5°C . Air temp
#1" above pile (temp of tule clump) 17.5°C .
1 croceum forced from stomach of a Thamnophis

July 5 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
6 newly metamorphosed juveniles collected under
willow logs + boards in willow thickets 20-30 ft *
from edge of receding Ellicott Pond. Cl. temps
recorded below.

cl. temp.	under log.
16.0	15.8
17.0	16.0
16.0	15.8
15.2	15.2
16.4 } entwined	→ 16.8
16.8 }	

Canopy cover 20-80% in all instances. * None was
farther from water than 30 ft but 1 which was 60 ft from
~~from~~ pond edge. Saw another shrew in here

J. D. Anderson
1958

Ambystoma m. croceum

July 5 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
this week - after seeing two last week. Turned over an
old RR tie in clearing + caught a mole Scapanus
latimanus, another probable predator. Ward Russell
tells me Scapanus ^{relishes} Batrachoseps.

July 20 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
2 juv. croceum collected from under ^{camp} flat board (11 am PDT) in
willow thicket (60-70% canopy cover). Cl. temps 15.8 +
15.6°C. Temp under board 15.8°C. When board was lifted
the animals were in contact. One turned around completely
and ran, at top speed, directly into a small mammal
burrow. It has gone 6" into burrow before it was dug
out. Burrow ran close to surface 1" + down. Soil
sandy loam + quite dry. This was apparently a learned
escape route judging by the speed + direction of the
route.

1 juv taken from under a dry, fragmenting log in same
willow thicket. 50% canopy cover. It was resting at
opening of a burrow with just head protruding. Turned
quickly + attempted to escape down the burrow. Cl. temp
16.8°C. Soil very dry under log - a dusty layer on surface.
Soil in burrow darker with moisture.

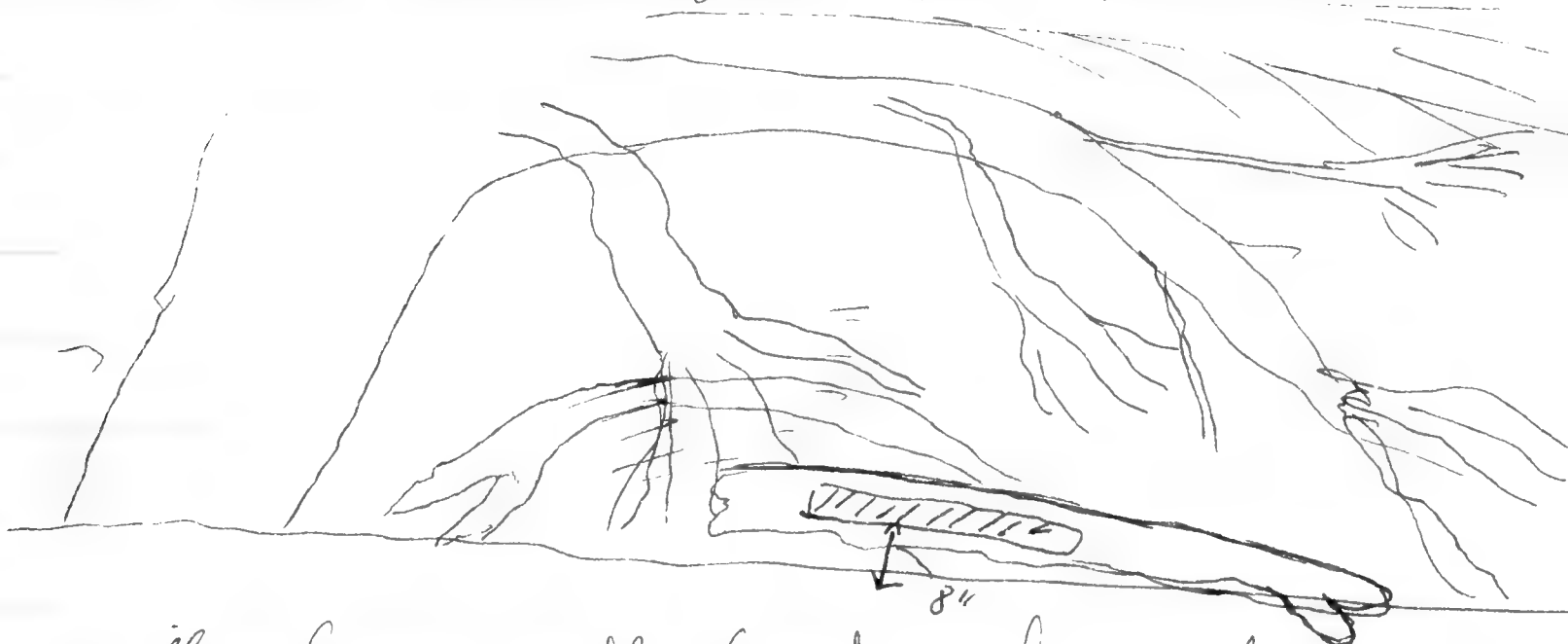
2 juvs cl. temps 15.8°C + 15.4 taken from under small
willow branches 6" by 2" and 8" x 4". Temp under branches
15.0 + 15.4°C respectively.

1 juv taken from under a large willow log 10 ft x 8".
Found at edge of log where there was a moist patch of
soil, not dry. Cl. temp 16.8°C.

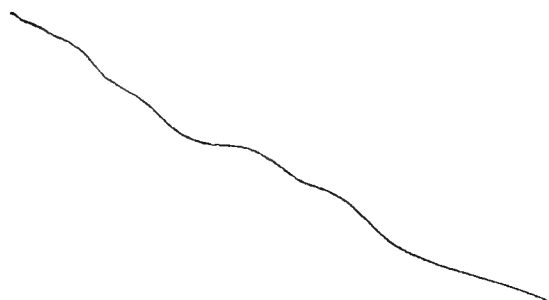
J.D. Anderson
1958

Ambystoma m. croceum

Aug 2 $\frac{1}{2}$ mi. NW. Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
6 newly metamorphosed juveniles found under loose bark of
a dead ~~tree~~, fallen willow branch 21" in diameter. Branch
only slightly rotted at the ends. Wood strong but moist and
very slightly rotted under bark, not able to break it with hands.
Temp under bark 18.6°C . Cl. temps of 4 juveniles collected
 $19.0, 19.0, 18.5 + 18.2^{\circ}\text{C}$. juv. Hyla regilla (2) under same
piece of bark 8" from croceum. Some bugs present also.
Croceum have color pattern well developed. Quite active -
2 managed to escape into crevices + under other pieces of
bark. Piece pulled off was 26" long x 6" wide.
~~Hyla collected from under an old railroad tie lying in~~
~~shade of large spreading willow. Canopy 70-80%.~~
Canopy cover for above (6 juvs) was approx 85%. Sun
must almost never shine on this branch - see below



Willow leans over this log. Large drooping branch is
tent-like in coverage. Other trees near by prevent sun
from coming under. Branches of shading willow touch ground
in most places. The fallen branch itself touches ground for only
 $\frac{1}{2}$ of its length - 12 ft. Spot where salamanders were taken is 8" off
ground.



J. D. Anderson
1958

Ambystoma m. croceum

August 2 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
1 juv. collected under dead willow branch 6 ft from edge
of pond. Branch 6 ft x 6". ~~A. m.~~ Salamander remained still, no
escape attempt. Cl. temp. 18.5°C , Temp under log 18.0°C . Log
in shade of 2 willow trees at edge of extensive clump of
willows. 60% Canopy cover. Soil moist + cool under log.
Surrounding soil hard + dry.

2nd juv taken under piece of willow bark 6" x 5" lying
under a willow branch which did not quite touch ground.
Canopy cover ^{ca} 85%, No escape attempt. Cl. temp. 17.0°C ,
temp under bark 17.0°C . Many sticks + bark slabs lying
here. Overhanging willow branches must give almost
perpetual shade. Canopy cover.

3rd juv. taken from under an old railroad tie lying in shade
of overhanging willow branches. Canopy cover ca 70-75%.
Cl. temp of soil 16.2°C , temp under tie 16.2°C .

4th taken under large dead log at edge of willow thicket.
Cl. temp 19.4°C , temp under log 19.4°C . Canopy cover
ca 50-60%.

Temp soil 1/4" in willow thicket 18.2°C ; 1/2" 17.4°C .

At edge of thicket away from logs but still shaded
temp of soil 1/4" 21.0°C ; 1/2" 20.2°C . Air temp 1" - 22.0°C
Sky clear, bright sun.

% H_2O in soil samples taken under logs where juveniles were
found 41.1%, 31.1%, 17.0%, 29.15

J. D. Anderson
1958

Ambystoma m. croceum

Aug. 29 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

1 juvenile taken in central willow thicket at 10:45 am.
Cl. temp. 17.5, temp under log 17.0. This individual taken by prying up a fallen, dead willow branch which had one end imbedded ~~in~~ 5" into soil. Salamander taken under this rotted end + 5" below surface. Soil moist - could be squeezed into a cast. Soil sample moisture content by dry wt. - wet wt. - 29.47%.

Canopy cover ca 80% - due to overhanging willow limbs. Dense growth of polygonum 5 ft away at edge of willow cover also provides shade from late afternoon sun, so this spot is almost always shaded.

Search of other logs, litter etc was not successful.

Aug 29 1/2 mi NW Ellicottville, 9 mi W. Watsonville, Santa Cruz Co., Calif

1 juv. taken under fallen willow log at edge of the willow thicket (see map of area for details). Cl. temp 17.8°C, soil temp. 16.5, Air temp under log 19.0°C. This is the fourth juv. taken from under this log in as many trips. 2nd juv. found by turning 8 ft log at edge of willow thicket (Canopy cover 60%). Saw its tail protruding from under a 6" x 3" piece of ~~pea~~ bark on ground under log. Cl. temp. 17.6°C, soil 18.0°C, Air 19.4°C.

6 juveniles taken from under a slab of bark peeled from dead willow branch on ground. This is same piece that produced 6 juveniles on August 2. It was carefully replaced at that time. Cl. temps

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1958

Amblystoma m. croceum

Aug 29 1/2 mi. NW. Ellicott RR Sta.; 4 mi. W. Watsonville, Santa Cruz Co., Calif.
of 4 of these: 17.2, 17.2, 17.2, 17.4; Temp under
bark 17.0°C. Time 2 pm. Sm. Hyla under bark also.

Another juv. taken under an old railroad tie
at far eastern end of willow clump. Tie shaded
by 4 small willows - Canopy cover ca 85%. Cl.
temp. 18.0, air temp under tie 18.2°C. No other animals.
1 juv. taken under large, rotted willow log
at same end of clump about 10 yds from last
capture. Cl. temp 17.6, temp under 17.5°C.

Canopy cover ca 65%
3 juv. taken inside of this log - all close
together & in termite workings. Termites in close
association. 2 croceum in bodily contact. Cl.
temps of 17.4, 17.4, 17.6°C., temp in log 17.6°C.

The six animals taken under bark - mentioned
before were all in contact. Time 2:25 pm.

1 large juv. taken at night 8:50 pm as it
crawled over surface of ground 8" from a fallen
log. Cl. temp 15.6, A.T. 1/2" 15.6°C. 12
yds E of the Eucalyptus tree. Ground very dry
sky clear, stars out, moon (full) just coming up
over horizon. Canopy cover ca 42%. Relative Humidity
(Shir's Psychrometer) 94%. Seems rather high
but there were water droplets on grass & water in pond
may add to humidity in this pocket. Fog not in
yet but large bank hangs just off coast.

J. D. Anderson
1958

Ambystoma m. croceum

Aug 29 1/2 mi. NW. Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
Soil moisture content of 4 specimens taken under logs here today. Det. by wet weight - dry weight method in lab.

11.82% ; 7.14% ; 17.83% ; 19.56%

Sept 13 1/2 mi. NW Ellicott RR Sta., 4 mi. W Watsonville, Santa Cruz Co., Calif
8 juveniles seen under same fallen willow limb described in species account of Aug. 2, 1958. 7 here & 8 all under same piece of bark peeled off the limb. 6 entwined together - 2 separated by an inch or two. The latter escaped. Temp under bark 20.0°C. Close & temps recorded: 20.2, 20.2, 20.2, 19.6, 19.6, 19.4. All animals quite active, but moist & healthy looking. Hyla regilla, saw ~~bugs~~, saws & 1 wood boring beetle larva seen under bark also.

1 large juvenile taken from under an old RR tie in willow thicket. Canopy cover ^{about} 85%. Cl. temp 18.0, temp under tie 18.0°C. Soil sample # 1; 23.30% moisture.

1 ad. ♂ taken from under large willow log 14" in diameter & about 5 ft long. Log embedded 6-8" in sandy soil.

Several mammal burrows open under the log. Cl. temp 19.0°C temp under log 19.0°C. Canopy cover ca 65% at edge of willow thicket. Soil sample # 2 3.50% water.

1 brightly marked juv. taken from under a narrow, 8" x 4 ft piece of willow wood. It was concealed in a small ~~niche~~ just slightly larger than its body. It was covered with dead willow leaves & rootlets. Not found it by probing in the litter. Some rotting wood present also. Cl. temp, 19.6, temp in niche 19.6°C. Soil sample # 3 24.45% water.

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1958

Ambystoma m. croceum

Sept 13 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
1 ad. Taken under large rotted willow log 16" diameter
+ 6 ft long. Buried 4" in sandy soil. Lots of rotted wood &
debris under log. Cl. temp. 14.4°C. Termite middle the log.
1 sub. tailed juv. seen under RR (first mentioned under this
date). It was in a small depression 2 1/2" deep x 3" wide.
Depression covered by twigs & some leaves. Did not notice
the salamander until it moved. Left it in same place to
see if we can locate it next trip.

S.D. #4

20.26%

Oct. 11. 1/2 mi. NW. Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
2 subadults found under RR tie in willow thicket. Cl. temps
15.8 + 16.0°C., temp under tie 16.0°C. One of these is
the sub. tailed juv. seen + left in this spot on Sept. 13,
1958 (see sp. acc. Sept 13). Canopy cover.

7 croceum taken inside a large rotted log at edge of
a willow thicket. Log 2 ft diameter - 6 ft long. Buried 3-5"
in soil. All (+ 2 which escaped) were entombed in a tight
ball in an opening in termite workings. Cl. temps as follows:
15.4, 15.4, 16.2, 16.2, 16.0, 16.0; temp in termite excavation -
15.8°C. No termites seen in area. 1 juv. Hyla regilla
hopped out - not sure whether or not it was in contact
with the Ambystoma.

2 (ad?) Taken under a large, rotted willow log
14" diameter - 5 ft long. Buried 3" in sandy soil.
Canopy (willows) cover ca 70%, Cl. temps. 17.0, 17.2°C.
Temp under log. 17.4°C. A cool, boggy day.
Soil samples taken. RR tie - , above log.
Last log - 1 ad ♂ taken under a large

~~Oct #~~
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1958

Ambystoma m. croceum

Oct. 11 1/2 mi. N.W. Ellicott RR Sta, 4 mi. W. Watsonville, Santa Cruz Co., Calif
willow log 8 ft long, 10" diameter. Buried 5-6" in
sandy soil. Salamander headed directly for a small
mammal burrow. A. temp. 18.0°C, temp under 18.2°C.

omitted note. The stub tail recapture originally
taken in a leaf covered depression under tree (see ~~see~~ ~~see~~
Sept 13), was 8" from this depression. Ran directly
to the depression + attempted to burrow thru the
leaves + ~~softly~~ cover.

Oct 18. 1/2 mi. N.W. Ellicott RR Sta, 4 mi. W. Watsonville, Santa Cruz Co., Calif
1 juv., A. temp. 17.8, taken under old RR tie (same one
mentioned in previous notes). Temp under tie 17.4°C. Cincinid
EP#1 marked, RFI, LFI and released in same spot.
Soil sample - $D_8 H_2O = 1.7$

1 ♂ (ad-subad?), A. temp 18.2 taken under small
willow log at edge of clearing, 1/2 way between large
central willow + Eucalyptus tree. Temp under log 18.2°C.
Log rests 1/2 on soil, 1/2 on moist grass. This individual
has st. swollen vent area - may be a ♂ on
way up (sexually) for breeding. Tot. length 100 mm,
SV 48, tail 45 mm. Marked (EP#2) RFI, LF-2 +
released.

2 (♂ + ♀?) taken under narrow (3" diam.) willow
branch lying on ground in willow thicket. Canopy 80%.
Many similar logs on ground. ♂ A. temp 17.0, temp
under log 17.4°C. EP#3, RFI, LF3 - Tot. length 98.5
SV 50.0, tail 44.5. EP#4 (♂), RFI, LF4.
Tot. length 109.5, SV 52.5, tail 53.0.

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Ambystoma m. croceum

Oct 18. 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co. Calif
EP #5 taken under small log near end of broken
picket fence, lying parallel to the downed willow.
Cl. temp 18.0. Total length 94.0, SV 48.5, Tail 42.0.
marked. RF2, LF1.

EP #7 + EP #8. under large rotted log at
E edge of clearing. Both apparently ♂♂ with slightly
swollen cloacae. Cl. temps 18.0 + 17.8. Temp under
log 17.8°C. No measurements #7 - RF2, LF2 -
#8 RF2, LF3.

3 more taken in the old termite log at E
end of willow area. These had cl. temps as
follows. 17.4, 17.2, 17.2°C. Temp in log 17.4°C.
All 3 pickled in field.

Nov 15 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co.
T. croceum collected in the willow grove. Several
are adults - 1 a ♂ with moderately swollen
cloaca.

1st 2 taken under narrow willow log. Cl. temps 9.2 +
Canopy 60% 9.4, temp under log 9.0. Soil sample taken.

Next taken under large rotted log at edge of
clearing. Cl. temp. 10.0, temp under 11.5°C.

1 taken in an isolated willow clump, under a
rotted R.R. tie. Cl. temp. 11.2, temp under 11.2.

Canopy 80%. This spot only 20 yds from the barn
2 taken under pickets partially buried in soil near
remains of an old fence. Cl. temps 10.5 + 10.4, temps
under 10.4 + 10.6°C.

J. D. Anderson
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Amblystoma macrodactylum croceum

Nov. 15 1/2 mi. NW Ellicott R.R. Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif.
Worked willow area with Coleman lantern between
7:45 pm & 8:30 pm. Sky clear, stars & moon bright. Had
been a shower between 6 pm & 6:30 pm. Ground wet
but not soaked. Air temp 7°C. Saw no salamanders
at all on surface despite rapid but careful search
of entire area.

Note omitted earlier in log.

2 pm. 1 ad ♂ collected from under the R.R. tie in
clearing at edge of pond. Cl. temp 13.0, temp under log
10.0°C. Salamander was at edge of mole run (fresh).
It curled towards the run when exposed. Frogs & juv.
Hyla regilla under log also.

8:10 pm. Checked under the same R.R. tie 5 hours
after capture of ♂. Another ad. ♂ seen in exact
same spot. This has occurred several times during the
study here at Ellicott.

Nov. 15 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Checked over oak woods & willow area during the day.
Found nothing. Soil still dry under most logs.

Worked Bonita Dr. with Coleman lantern. Began at
5:45 pm. - completely dark but sky clear. 1 road
check was negative. At 6 pm checked stream in &
at 6:10 it began to rain lightly. At 6:20 I juv
A. m. croceum collected as it crossed road at
Wend I.H. house. Headed towards woods (due S
by compass). Rain stopped at 6:35. 5 other
road checks were negative.

J.D. Anderson
1958

Journal

Dec 13 Valencia Lagoon, Rio del Mar + Vicinity, Santa Cruz Co., Calif.
trace of moisture + all were aggregated. Isopods -
though fairly abundant are all in the few remaining
moist areas + aggregated in large masses. Saw a
few scorpions + Carabid beetles but little else.
Caught a mole under a railroad tie - same
place where one was taken earlier this year. An
Ambystoma lives here but I didn't see it this
time. Many Hyla under the ~~tree~~ tie. Back to
Valencia Lagoon at about 3 pm. Tore apart two
Woodrat houses near the willow thickets but produced
no Ambystoma. Worked in the oak wood. Tore apart
several large rotted logs. Found two Batrachoseps,
1 a gravid ♀. No Ambystoma.

Went to Red Door Inn - local hangout. Bob
Flowers, a denizen of the Red Door, and an
Ambystoma scout found another pond with
Ambystoma possibilities. "Go to center of
Aptos + take the road with over head "Keep out"
sign. Walk 5 mi. into hills. A good pond with
willows in a small valley up there". Will
check on the next trip.

100

100

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1958

Journal

Dec 13 Valencia Lagoon, Rio del Mar + "Ellicott", Santa Cruz Co., Calif.
Left Celmar at 7:45 am. Drove via Bayshore Freeway,
Scraper + Joe Gator to Santa Cruz. Arrived Rio del
Mar about 10 am. Made a cursory check of willow
area, everything is dust dry here after the prolonged
dry autumn. Drove via San Andreas Rd to Sunset
Beach State Park to check a pond there. Still
water in this one - I suspect it gets water from an
irrigation ditch or a hidden stream. No salamanders
or frogs. Next I drove to a pond site near
Aromas (where many T. granulosa were collected
in Fall of 1956). Pond is completely dry. The willow
grove around this is suggestive of that at
"Ellicott" but ~~is~~ considerably more dense. Turned
many logs, some had damp soil under, but found
nothing - not even a Hyla. Drove back towards
the "Ellicott" study area. Stopped to get permission
from Mr. Edwards (J.W. Edwards 1630 Buena Vista)
who is extremely cooperative and always on the
lookout for "the gold backed devil dog". Went to
1/2 mi. NW Ellicott RR Sta., 4 mi. W Watsonville locality.
The area is now drier than I have ever seen it.
"Dust dry". Found 1 A. m. croceum under a
partially buried board + 8 aggregated under a
partially buried large willow log. All of the
most productive spots are now much too
dry for Ambystoma. Saw very few Hyla.
all that were found were under logs with a

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Journal

Dec. 27

Rio del Mar + Ellicott, Santa Cruz Co., Calif.

Left Berkeley at 12 noon with Bob Crispen. Heavy traffic on Bay Bridge + parts of Bayshore Hwy.

Arrived in Santa Cruz at 2:30 pm. There had been very heavy rain in Bay area last nite and obviously there had been rain in the Aptos - Rio del Mar Area. Spoke to residents - the rainfall they described did not seem to be as heavy as the Bay Area. This borne out when we checked under trees in the study area, there were dry spots under leafless willows + soil was only wet at surface. Worked under willow areas at Valencia Lagoon + found the soil still very dry under logs. Found nothing. Made quick check in oak woods but as usual found nothing. The one can buried in the woods had an adult ♂ Ensatus in it. Very fresh animal, most likely it had been trapped during last night's rain. There was about 1/2" water in bottom of can - some might be due to runoff. Next drove to Ellicott locality - 1/2 mi NW Ellicott R.R. Sta. 1/2 mi. W. Watsonville. We worked here for approx. 2 hours + got ♂ Ambystoma m. croceum from under R.R. ties, logs etc. The sandy soil here seemed to retain moisture better than that at Valencia. The croceum must have responded to rainfall a little since they were not directly under the surface objects on Dec. 13. Ate supper 5:30 - 6:10 pm. Dark at 6. Began work with

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1958

Journal

Dec 27 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Left at Valencia at 6:10 pm. The sky was
perfectly clear but the moon has not yet risen &
it was a very dark night. Traveled the road in
usual fashion. 2 checks on counts and one up
on the hill road. Encratia schottii were
very abundant, we saw 19 and saw one and
collected 11 - total of 20. Collected 1 Linea on
marginis + only 1 Eutrichromis. There were
pickets along the road & the road was quiet
with. 1 Imagis a m. m. m. taken on
the Hill road check. Fits usual pattern of
Encratia emergence - no rain - no or few Encratia.
Encratia on the other hand well emerged ^{about} after the
first rains even though it is not actually raining
at night. Moon rose at 7:20 pm. and the
numbers of Encratia dropped off. Between 6:10
7:10 we saw ~~5~~ or collected 26 and between
7:20 & 8 pm saw only 4. Moon was full &
very bright. Left the area soon after 8. After
passing the car we left Santa Cruz at 8:30
arriving in Berkeley at 10:30. Took 17
on return trip. The new stretches of
freeway from San Jose to Oakland make it
a fast trip.

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1958

Journal

- Jan. 5 Valencia Lagoon, Rio del Mar and vicinity, Santa Cruz Co., Calif.
Left Albany at 12:20 pm. Has been raining pretty steadily here since 11 pm last night. Heavy rain all way down. Arrived Valencia at 2:30 pm. Heavy rain. Checked the willows over, turning logs + raking leaf litter. Soil moist now, leaf litter soaked. Found nothing. Worked a little in oak woods but got just 1 *Batrachoseps*. Bonita Dr. is full of large puddles. Water running off hills into pond area at a rapid rate. No water as yet in pond but at present rate it won't take long. Drove over to 1/2 mi. NW Elliott Rk Sta., 4 mi. W Watsonville. Checked from car. There is water in pond area here. The furrows (corner ploughed areas) are filled + a small, shallow pond is present at back end (10 yds x 20 yds). If rain persists breeding activities will begin shortly. Drove to Edwards ranch to check with owner for night work. He said rain began after midnight + has been steady since then. Ate supper 1st 4:15-4:35. At 4:45 pm with very little light I checked Bonita Dr in driving rain. No salamanders.
2nd Next check 5:30-5:50 pm. - very dark; heavy driving rain. Saw 15 *Hyla regilla* - mostly juveniles. Collected 1 juv. A. m. croceum.
3rd 5:55-6:25. Conditions as above, rain heavier. Saw another 15 *Hyla*. Got 5 *croceum*. All leaving pond.
4th 6:30-6:55. - rain slackened slightly. Saw 8 *Hyla regilla* + 1 *Desmognathus siskiyou*.

J.D. Anderson
1959

Journal

Jan 5

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
yth - 7 ♂ Croceum. all facing pond.

After this check I decided to try drying the road near Elliott Pond since it is raining hard & tigrinum might come out. 3 trips - each of approx 3/4 mile near the Elliott locality, ~~that~~ produced 12 juv. tigrinum time 7:15-8:20. Saw approx. same number not collected. Most were moving away from pond but not as clear cut as with Croceum at Valencia.

8:25-8:50 - Drove to pond near beach in Sunset Beach State Park. However woods were flooded 1/4 or so mi. either side of pond so no check could be made. Returned to Elliott at 8:50 & made a check of willow area 8:50-9:35.

Saw no salamanders. Torrents of water must have passed thru willow area. Logs were rolled, channels cut & much silt deposited.

Checked pond area & all around it - results all negative. Still raining steadily. All runways are filled & pond is now 25 yds x 15 yds.

Drove back to Valencia, raining hard again. made two checks on Bonito between 9:45 & 10:30 pm. Got 4 ♂♂ + 2 ♀♀. All facing pond. Left for home at 11:45 - arrived MVZ 1:45 am.

Notes omitted - Saw 1 Dilephis in willow trees at Elliott. A Fox was seen near willow also - 9:30 pm. Possible Predators.

J. D. Anderson
1959

Journal

Jan. 10 Valencia Lagoon, Rio del Mar + vicinity, Santa Cruz Co., Calif.
Left MVZ 10:30 am with Steve Lynch. Drove to Sunnyvale + ate lunch with Steve's parents. Out to Rio del Mar, arriving at 2 pm. Sky cloudy, had rained on Jan. 9. No rain now but weather forecast had predicted it for tonight. Checked the can buried in oak woods near parking area - contained 1 ♀ Ambystoma m. croceum and 3 drowned Ensatina. Everything very wet now. There was no water in pond area on Monday, Jan. 5 but now it is filled almost to capacity. Water extends from willows on east to the small isolated willow on west - just a few yards short of maximum size of last year. Worked all around edge of pond looking for eggs but found none. The water is very muddy + visibility is poor. Used dip net along fringes but found nothing. At approx. 3:15 we drove towards the Ellicott locality. Stopped at the small tigrinum pond near Ellicott - 1 mi NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif.
Checked under logs + boards here for tigrinum but were not successful. There is a little water in this pond - approx 12 yds x 8 yds + about 2-5" deep. Water is very clear. Must be purely a rain pond. No runoff rivulets seen + water not muddy. Searched water + bottom carefully for salamanders but found none. At 4 pm we began work at "Ellicott" pond - 1/2 mi NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co.
The pond is almost a maximum size and is

J.D. Anderson
1959

Journal

Jan. 10

Valencia Lagoon, Rio del Mar vicinity, Santa Cruz Co., Calif.
very muddy. Set out 12 funnel traps in water at 4:15 pm. Used a grid, 4 lines of 3 traps. Traps in a line ¹⁰8 yds apart & the lines 5 yds apart. First line 15 yds from shore & in 4" of water. Last line 35 yds from shore & in 8" of water. After setting traps we worked the willow area turning logs. Water has roared thru here in places cutting channels & turning logs. Bill departed on way. Found salamanders away from these places. Most were in the woodpile under the large willow nearest the barn. Got 10 A. m. A. m. croceum. Adult Hyla regilla everywhere under boards & logs. Saw a clasping pair under one log. Isopods very abundant. Saw more crickets & Jerusalem crickets than on previous trips. Earthworms very common. Ate supper in car & returned to Valencia at dusk. Began walking Bonita Dr. at 6:30 pm.
1st trip - 6:30 - 6:50 pm. Faint mist-like rain. Stars showing dimly. 3 Hyla & 1 ♂ Ensatina on road.
2nd trip 6:50 - 7:10. Conditions as #1. 4 Hyla, 1 Ensatina & 1 ♂ A. m. croceum
3rd 7:15 - 7:40 - 4 Hyla - no salamanders - no rain - stars shining brightly.
4th 7:40 - 8:15. 2 Ensatina, 5 Hyla, 1 ♀ A. m. croceum no rain. Checked edges of pond also on this trip. But water is too muddy to see any distance at all. Sky cloudy again but no rain falling.

J.D. Anderson
1959

Journal

Jan 10 Valencia Lagoon vicinity, Santa Cruz Co., Calif
Hyla regilla chorusing in the lagoon. More ♂ Hyla
than I have ever seen or heard. The extremely successful
year last year must be making itself felt. Left
here at 8:25 & drove to "Ellicott Pond". Worked in the
willows for salamanders on surface but found none.
Checked edges of pond but again cloudy water makes
viewing impossible. Checked the trap grid but
caught absolutely nothing. The Hyla chorus here
is fantastic. Actually hurts the ears. Surface of
water looks like it is covered with bubbles - vocal
sacs of singing ♂ Hyla. We caught 2 Rana
aurea & saw 2 others. Can only hear the Rana
a few yards away - drowned out by Hyla. Left
"Ellicott Pond" at 9:20. Went to "New Tiger Pond"
1 mi NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa
Cruz Co., which was noted earlier in day. A very
large chorus of Hyla going here also. Again
saw almost all ♂♂ - only 2 clasping pairs.
and 2 undressed ♀♀. Saw & collected 1 A.
tigrinum quickly. Saw 4 others - all large
♂♂ within a foot of each other & a 5th several
yards away. Collected 4 ♂♂. Spent some more
time looking for more tigrinum and left at 10:30 pm.
Drove back to Valencia & made one more road check.
10:40 - 11:00 pm Got 1 ♀ A. m. croceum & saw 5 Hyla.
Left about 11:30 pm & arrived home about 2 am.

J.D. Anderson
1959

Journal

Jan 21

Valencia Lagoon, Rio del Mar & vicinity, Santa Cruz Co., Calif.

Left Berkeley at 8:30 am with R. Crippen. Drove to Santa Cruz via Rt 17. Short stop for photo equipment in San Jose. Arrived Rio del Mar at 10:45. Pond still at maximum size. Shoots of Eleocharis coming up at edges - not yet tall enough to come above surface of water. Polygonum not growing as yet. Worked N end of pond for Ambystoma eggs. Found them in fair numbers (see sp. accounts A. macrodon for details). Checked entire N. half of the pond & found eggs in shallow water wherever there was a clump of Eleocharis. Checked around Polygonum but saw no eggs attached to it though 2 yds from clumps of Polygonum there were many eggs on Eleocharis. Next drove to "Tiger Pond", 1 mi NW Ellicott RR Sta., 4 mi. W. Watsonville.

The small pond (see Jan 10 note) was completely dry. That is there was no standing water, some 2 puddles less than 1 ft across. Long holes dug into substrate filled with water, so it won't take much to re-fill this pond. Hyla regilla had bred while there was water and hundreds of egg masses were destroyed when pond dried. It will be interesting to follow this pond thru the season to see what effect this premature breeding has on populations of Hyla and Ambystoma tigrinum. Drove to "Ellicott Pond" next. Worked around edges & picked up about 20 eggs of Ambystoma. Hyla masses quite abundant. Water very muddy here. No sign of adults or larvae. Vegetation just beginning.

J. D. Anderson
1959

Journal

Jan 21

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
to sprout. Shoots of Eleocharis coming up in
shallow water along edges. Not, as yet, tall enough
to protrude about surface of water. Returned to
Valencia at 4 pm + collected a series of procreans
eggs between then + dark. ~~After dark~~ Checked
the funnel traps (set out at 1 pm) at 4 pm -
nothing caught. After dark 6:30 - 8:30
checked edges of pond (+ deeper areas) for
active Ambystoma with no luck. Water
much too cloudy for decent observation - impossible
to see bottom in most places. Water temp 8 pm
9.8° C. Drove to "Tiger Pond", just for a
check - nothing. Then to Elliott - no
salamanders. Spent some time photographing
Hyla regilla + Rana aurora. Hyla chorus
has dropped way off but Rana aurora
going in a very strong chorus. Returned
to Valencia at 9:30 - checked traps + pulled
them in - no luck. One ~~was~~ further check around
edges produced nothing. Hyla chorus here
very weak - water temp 9.6° C now. Bright
nearly full moon shines quite a lot of light.
No Rana calling, yet I know they are here.
Left for home 10:30 pm. Took Rt 17 all
way - arrived Berkeley 12:15 am. Excellent
time on this route.

J. D. Anderson
1959

Journal

Feb. 14 Valencia Lagoon, Rio del Mar + vicinity, Santa Cruz Co., Calif.
Left MV2 about 8:10 am. Drove via Bayshore Freeway,
St. Rts 9 + 17 to Santa Cruz, then south on Rt 1 to Rio del Mar.
Worked Valencia Lagoon with dip net until 1 pm. Hoped
to find small larvae but got only 1 nearly hatched larva
+ many eggs which are close to hatching. Eggs are
in shallower parts of pond near living + dead
Eleocharis stalks, as is usual. Very few tadpoles
seen. Only Hyla regilla + these all tiny, newly hatched
larvae. Fresh Hyla eggs seen, though most were
in late stages - hatching. Ostracods fantastically
abundant. Did not see any fairy shrimp. Drove
to New Tiger Pond next (1 mi. NW Ellicott RR Sta., 4 mi. W
Watsonville, Santa Cruz Co., Calif.). This pond had
filled prematurely in early Jan. + had ad. tigrinum in
it on Jan. It was completely dry on Jan 21 + Jan 24.
But is now full to ~~the~~ capacity - result of recent
rains. Worked this pond from 1:30 - 2:30 pm. Got
fresh A. tigrinum eggs along margins of pond. Many
H. regilla egg masses - all fresh - only cleavage
to blastula. As usual no adult tigrinum
were taken during day despite turning all brush etc
in the area + dragging bottom of pond with net.
Drove to Ellicott Pond - 1/2 mi. NW Ellicott RR Sta.,
4 mi. W. Watsonville, Santa Cruz Co., Calif. Water
very muddy here. Worked all along edges for
larvae of A. m. croceum + A. tigrinum. Got
only 4 very small tigrinum larvae. Did not see

J. D. Anderson
1959

Journal

Feb. 14 Valencia Lagoon, Rio del Mar, + vicinity, Santa Cruz Co., Calif
eggs - but recent rain + run off makes water so muddy
that it is impossible to see even 1" into water. 1 hour
dip netting = 4 tigrinum larvae. Saw + collected
some small Hyla tadpoles + some newly hatched
Rana aurora tadpoles. Worked the willow area
turning logs - got 6 adult A. m. croceum.
At 4:30 returned to Valencia Lagoon + worked
Oak Woods turning logs etc for 3/4 hour. Saw
5-6 Batrachoseps + 1 Ensatina. Ate supper
with Chuck Haby in Rio del Mar. Returned
to Valencia at 7:45 pm + walked road
with Coleman lantern 8 - 9:30 pm. Got
2 ad ♂ croceum moving from breeding
pond towards oak woods. Sky cloudy, no
rain. Rel. Humidity 92%. Drove to see the
"New Tiger Pond" + worked it until 10:45. No
lure. H. regilla in strong chorus. Many
chasing pairs seen. No tiger salamanders.
Left for home at 11:30 pm. Arrived Albany
about 1:30 pm.

J. D. Anderson
1959

Journal

Mar. 1

Valencia Lagoon, Rio del Mar + vicinity, Santa Cruz Co., Calif.

Left Berkeley at 7:15 am. Drove via Rt 17 to San Yaba - Santa Cruz - then on Rt 1 to Rio del Mar. Arrived 9:10 am. Worked edges of pond with dip net to check for larvae. Got about 20 very tiny croceum larvae. Very few tadpoles taken as yet. Insects blooming - Ostracoda particularly abundant. Eleocharis has not come up very much. Recent rainfall may be responsible. Eleocharis usually comes in best as water level drops. Hyla regilla eggs masses in abundance - early change to hatching. Worked here 1 1/2 hrs, then drove to "New Tiger Pond" -

1 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif.

Worked all around pond - now maximum size. Got ~~a~~ A. tigrinum eggs easily. No larvae as yet, though many eggs approach hatching. H. regilla eggs in abundance. 11:45 am. Drove to see Mr. Jack Edwards - owner of the "Ellicott Pond" property. He had 2 A. m. croceum, 1 A. tigrinum + 4 Aneides lugubris for me. Called Ambystoma - Devil Dog; Aneides - ground lizard. After lunch I returned to "Ellicott Pond". Worked most of afternoon with dip net - no luck. Water is deep - slight flood conditions, larvae are small + ~~easy~~ tough to net \therefore nothing. Got 7 adults by working in willow grove turning logs.

After supper worked Ellicott area with Coleman ladder - got nothing. Left about 9 pm. Home about 11.

J. D. Anderson
1959

Journal

March 30 Valencia Sagoon, Rio del Mar, Santa Cruz Co., Calif. (+ vicinity)
Left Albany at 7:40 am with R. E. Graham. Drove
via Rt. 17 to Los Gatos + then ~~across~~ across Santa Cruz
Mtns. Stopped to check a pond in Scott's valley near
the intersection of Rt. 17 and Granite Creek Rd. Time 9:35 am.
Light, cold rain falling. Saw 5 Rana aurora around
margin of pond, one adult collected. Water Temp 15.0°C.
many larvae of Hyla regilla + R. aurora seen. Drove
to Santa Cruz + then south to Rio del Mar on Hwy 1.
Began larval work at 10:30 am. Still raining lightly.
Dick + I collected about 40 Ambystoma m. croceum
larvae. Most taken at edges of Potamogeton clumps
+ Eleocharis clumps. Depth of water 6-10",
temp. of water 13.0 - 13.5°C. Hyla tadpoles very
numerous, Rana aurora common but not like Hyla.
Stopped dip-net work at 11:35 am. Ate lunch and
drove to 1 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville,
Santa Cruz Co., Calif. Worked thru a woodpile
here. Rain stopped now, sky overcast. Collected 1 large
adult Merriamotus multicarinatus and 1 juv. 3
S. occidentalis taken also. Stopped next at the "Tiger
Pond" - 1 mi. NW. Ellicott RR Sta., 4 mi. W. Watsonville. This
pond has gone down in water level + area. Deepest
part 5". Temp of water 4" deep - 19.5°C. Sky
overcast. Very few Hyla larvae in water. A careful
check of the entire pond produced no Ambystoma.
Judging from the water level + temperature I suspect
that the recent warm spell - mid march may

J.D. Anderson
1959

Journal

March 30 Valencia Lagoon and vicinity, Santa Cruz Co., Calif
have wiped out the larval population. The water is shallow enough + exposed to a full days sunlight so it heats up rapidly. At any rate the pond looks as though it will soon dry up so whether the temp. is most important is academic - this year at least. Three Rana aurora were collected from under boards near the edge of the pond. 1 Hyla regilla taken under a board 20 yds from the pond. Drove to Ellicott Pond - 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville. Began work with dip nets at 1:30 pm. Worked 1 1/2 hrs (both of us) making a complete circuit of the pond. Got just 1 Ambystoma m. croceum larva. Cannot understand this since larvae are usually abundant this time of year. The Eleutherus seems to be behind in development + it is best place to look for Ambystoma. But they must be somewhere. Worked for 1 hour turning willow logs in the willow clump. Got 9 adult croceum and 1 Hyla regilla. We next drove out the road from Ellicott towards Watsonville. A series of Batrachoseps attenuatus taken in a willow grove 1 mi. E. Ellicott RR Sta. Drove on to Watsonville then east on the north side of the Pajaro River + worked the small pond 1 mi. SW Arroyo, Monterey Co. Found nothing in the amphibian line. The nests were not to be found. The pond is 2/3 surrounded by willows. Snail fauna is quite different from that at Valencia Lagoon or the Ellicott Pond. Dick Graham collected a.

J. D. Anderson
1959

Journal

March 30 Valencia Lagoon and vicinity, Santa Cruz Co., Calif
series from here + Elliecott to take to Allen
Smith at Calif. Acad. Science for identification.
Left this locality at 5:00 pm + drove towards
Santa Cruz. Ate supper on way. Took turnoff
at Rio del Mar towards Aptos. In center of
Aptos we took the (only?) road east out of
town. Drove along Valencia creek for three
miles. Most of way we drove thru
good Redwood forest. 3 mi. NE. Aptos
the road makes a sharp U turn + crosses
Valencia creek. We stopped here and checked
the creek for newts. Ideal habitat - much
like coastal Mendocino County. Finding
nothing I worked up a small trickle about
30 yds above the creek. It ran down through
a well shaded, moist Redwood grove. Two
larval Pleurodonta ensata (tiny) taken
in this trickle (12" wide at widest, 4" at narrowest).
Drove back to Valencia for road check with Coleman
lantern. Clear, crisp evening, bright stars etc. Began
check at 7:30 pm. 2 checks (4 trips) on Bonita Rd; 1
on Hill Rd. No Ambystoma but we got 2 Ensatina and
3 Hyla regilla.

J.D. Anderson
1959

Journal

April 12

Valencia Lagoon, Rio del Mar and vicinity, Santa Cruz Co., Calif
Left Albany Village at 7:20 am with Steve Lynch. Drove via
Eastshore Freeway to San Jose, then on Rt 9 to Santa Cruz & Hwy 1 to
Rio del Mar. Worked Valencia Lagoon for larvae, collecting 30
in about 1 hour of dip netting. Fog present - did not lift
until 11:00 am. The pond has dried considerably since March
30. The west end of the pond has receded 8-10 yards. The
good Eleocharis areas are almost dry. The water level
has dropped 6" or so. Pond will dry by May at this rate
unless there is more rain. Larvae now are concentrated
about clumps of Polygonum with water 1-3" deep at best
in Eleocharis mounds usually frequented. We worked out in
deeper water - 15-20" deep but got only 2 larvae.
Water still murky from silt & difficult to see
into. 2 pairs of Mallards, 1 pair Cinnamon Teal &
a single coot seen on pond. This is first time I've
seen Cinnamon Teal at Valencia. Left Valencia at
11:15 to head towards Ellicott. Picked up 2 Coluber
constrictor mormon + 1 Pituophis catenifer under
boards at SE end of pond area. Drove to the tiger
pond 1 mi. NW Ellicott RR Sta., 4 mi. W Watsonville, Santa Cruz
Co., Calif. Found it completely dry - all amphibians
failed to make it through the aquatic stages. Next
drove to "Ellicott Pond" and worked it 1 1/2 hrs for larvae.
Got just 2 Ambystoma m. croceum larvae. Turned
logs in willow clump & got 2 adult croceum, ate
lunch at 2:15 pm and spent rest of afternoon snake
hunting about 1 mi. NW Ellicott RR Sta. Got

J. D. Anderson
1959

Journal

April 12 Valencia Lagoon & vicinity, Santa Cruz Co., Calif

1 Pituophis catenifer (large) crossing ~~the~~ a small
paved farm road, 1 juv. Lampropeltis getulus,
1 Sceloporus occidentalis & 5 Gerrhonotus multicarinatus.

at 5 pm drove thru Aptos & took Valencia road along
Valencia creek to a red-wood canyon behind Aptos.
Found good Dipsosaurus habitat but were unable
to hit them or anything else. Left about 7:30 pm
+ drove home via Sunnyvale - Alviso - Eastshore
Freeway.

Aptos

J.D. Anderson
1960

Journal

Feb 3

Valencia Lagoon, Rio del Mar, Santa Cruz Co., California
Left MVZ at 4 pm with C. Thaler, S. McGinnis & T. Papenfuss. Drove via Rt 17 to Santa Cruz, then by Rt. 1 to Rio del Mar. Rained most of day in Berkeley. Sky overcast in Santa Cruz, ground very wet but no rain. Began working Bonita Road with Coleman Santen at 6:45 pm. No salamanders active - no rain. Hyla regilla chorus ~~to~~ at maximum intensity. At 7:05 we found one gravid ♀ A. m. croceum at west end of pond, in grassy area just about to enter pond. Checked edge of pond for eggs but none were seen. Thaler & I worked Bonita Rd. zone more while McGinnis & Papenfuss worked upper road. They found 1 Aneides lugubris. We found 1 Aneides lugubris, 1 Ensatina eschscholtzi and 1 gravid ♀ A. m. croceum on the sandy road. Worked pond edge again & picked up a large series of Hyla regilla. At 9:15 pm we drove to the tigrinum locality, 1 mile N.W. Ellicott Pt Sta., 4 mi. W. Watsonville.
Here picked up 1 large ad. ♂. A. tigrinum.
Vast region suitable for breeding. None other seen. H. regilla in chorus & common. Heard Sorel Owl calling here. Next drove to Ellicott Pond. Worked entire edge of pond but saw no salamanders, the water

J.D. Anderson
1960

Journal

Feb. 3

Valencia Lagoon, Ellicott + vicinity, Santa Cruz Co., Calif.
being very murky with silt. Hyla
chorus deafening. Rana aurora in full
chorus. Picked up 2 ♂ R. aurora. D.
McGinnis got 1 gravid ♀ Procyon under
log in willow thicket. No other
activity so we left here at 10:35 pm.
Heard ♂ Horned Owl talking 100+ yards
from pond. Went back to tigrinum
pond, checked thoroughly but to no avail.
Driving back towards Valencia Lagoon
on San Andreas Rd. we picked up
1 Eusapia, 1 young Thomomys lotta
+ 1 opossum. Back at Valencia Lagoon - 11:00 pm.
Worked entire length of Bonita Road once and then departed.
Stopped in Santa Cruz for coffee, then home. Arrive
MVZ 1:55 am.

J.D. Anderson
1958

Ambystoma macrodactylum croceum

Dec 13 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co.,

1 ♂ collected from under small board partly buried in sandy soil of a willow thicket. Board buried about 2". Cl. temp. 15.6°C, soil temp. 14.8, air temp (under board) 16.0°C. Surface soil is extremely dry now. Most small logs & boards on surface retain little or no moisture under them. Isopods, Hyle & Ambystoma found only where logs are partly buried.

10 croceum seen (8 collected) under a large, partly buried willow log (12 ft x 1 ft). Log buried ca 4 to 4 1/2". Difficult to move. All salamanders were in a loosely coiled aggregation near the center of the log. Temp under log 15.0°C. Cloacal temps of 8 recorded: 14.0, 14.0, 13.8, 13.8, 13.6, 14.2°C. Soil quite damp here compared to most other spots investigated. A mole burrow (tunnel) open at top in place run down mid line of log impression. 6 of the 8¹⁰ went into this almost instantly. 2 were never recovered. Several appear to be ♂♂ coming into breeding (vents slightly swollen).

The log under which the aggregation was found was well sealed into soil, very difficult to move. Provides best close-to-surface habitat in entire area. Mole workings very abundant, probably many croceum make use of these & other mammal workings.

J. D. Anderson
1958

Ambystoma macrodactylum croceum

Dec. 27 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
Worked in the willow clumps bordering "Ellicott Pond"
for 1 3/4 hrs. Collected 8 specimens, under logs & boards.
1st ad. ♂ cl. temp. 12.6, temp under log 13.0°C. Taken
under old RR tie, embedded ca 1/2" in sandy soil. Many
isopods () under log. This spot in SE most
corner of willow clump. Canopy cover ca 70-75%.
2nd ♀ cl. temp. 14.0, temp under board 14.2°C. Under
flat board in same willow clump as above.
3rd ♀ cl. temp 13.6°C, temp under tie 14.4°C. Under
moss covered RR tie near wood pile at E end
willow thicket. Canopy cover ca 65%.
3 more under boards in same area as #3. Cl. temps
13.6, 12.6, 14.0°C, temps under cover 14.0, 13.5 & 14.0.
2 more taken under large willow log ca 12' long
(see notes Dec 13 for details). Isopods very
abundant under all boards in area. Saw only
few juv. Hyla regilla - these looked dried out &
quite thin. One or two carabid beetles & 1
Jerusalem cricket made up total animal life.
The recent date has not brought about any
great resurgence of animal life - though the
croceum have responded some. On Dec 13
I collected 8 here but they were all together
under a partially buried large willow log &
none were to be found under logs & ties as
in Oct & today.

J. D. Anderson
1958

Ambystoma m. croceum

3

Dec 27. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Worked willow areas + oak woods during early afternoon but was unable to connect on croceum. Walked Bonita Rd + Hill Rd between 6:15 pm + 8:05 pm with Coleman lantern. Dark night, but clear. Moon (full) rose about 7:20 pm. Rained the previous night. Many puddles on roads.

Got just 1 croceum at 7:15 pm on hill road where it takes sharpest turn. Cl. temp 9.2, temp $\frac{1}{4}$ " 9.0°C. Specimen facing towards the pond area. No others seen. Saw a total of 30 Ensatina, 1 Batrachoseps + 1 Ameiurus lugubris. 10 juv. Hyla regilla + 1 adult seen. Again the croceum seem to require rainfall before moving very much.

J.D. Anderson
1959

Amphystoma m. croceum

Jan. 5

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Collected a total of 19 croceum on walking Bridge Dr. between 5:30 + 6:55 pm + again between 9:45 + 10:30 pm. Coll. made up of 2 juveniles, 2 ♀♀ + 15 ♂♂. All but 1 juv. were moving down the bank towards the pond. Dried trees all the while. Road full of large puddles + small, running rivulets. Both ♀♀ taken between 10:05 + 10:30 pm.

A. temps as follow (temp "by" in parentheses)

juv - 9.8 (9.5) + 9.2 (9.2).

♀♀ - 8.6 (9.0) + 9.0 (9.0)

♂♂ - 9.2 (9.2); 9.2 (9.2), 8.6 (9.0), 9.0 (9.0),
9.4 (9.2), 9.2 (9.2), 9.0 (9.2), 8.2 (8.6)
8.6 (9.0), 8.6 (9.0), 8.8 (9.2), 9.6 (9.6), 9.0 (9.0),
8.4 (8.6), 9.0 (9.2).

#5.

4:45 - 5:15 - nothing

5:30 - 5:50 - 15 Hyla; 1 croceum (juv)

5:55 - 6:25 - 15 Hyla; 5 croceum (1 juv, 4 ♂♂)

6:30 - 6:55 - 8 Hyla; 7 croceum; 1 Ensatina

9:45 - 10:30 - 10 Hyla, 6 croceum, 1 Ensatina
↓ 2 trips. ↓ 4 ♂♂, 2 ♀♀

all males had tremendously enlarged cloacal region,
elongate tail fin + head as well. In look
about same.

Ambystoma m. croceum

Jan 10

1/2 mi. NW Ellicott RR Sta., 4 mi. W Watsonville, Santa Cruz Co., Calif

10 collected under logs & boards between 4 pm & 5:30 pm.

Almost all back near last sprawling willow closest to the barn. Most appear to be ♀♀ gravid or slightly enlarged.

A torrent of runoff water apparently rushed thru much of this willow grove during one of the last heavy rains.

It cut channels, deposited silt & rolled many logs.

Soil muddy in that area. No salamanders found there but only where logs were untouched by running water.

A. temps recorded on this cloudy but warm day:

15.8, 16.2, 15.8, 15.0, 15.0, 14.1, 14.6, 14.6, 15.8, 14.8;

temps (in order) under cover 15.0, 15.8, 15.8, 15.0, 15.0, 14.4, 15.0, 14.6, 16.0, 15.6.

Hyla regilla adults under most logs. No other salamanders.

Jan 10

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

1 ad ♀ (gravid) taken from 5 gallon can sunk in ground in oak woods near edge of pond. Had checked can for 5, when it was empty. 3 drowned Eusania + 2 millipeds in can also.

1 ad ♂ taken at 6:35 pm crossing Bonita Rd in a fine mist-like rain. A. temp 13.8, temp 1/4" above road 14.0°C. Forged pond from woods.

8:15 pm. 1 ♀ taken as it crossed Bonita Rd. A. temp 13.0, 1/4" 13.0°C. Forging pond, from woods.

11 pm - 1 ♀ or above, A. temp 13.0, 1/4" 13.0°C.

No rain for 44 but everything sopping wet + sky cloudy, as between showers.

J. D. Anderson
1959

6

Ambystoma m. croceum

Feb. 14 1/2 mi. NW Elliott RR Sta., 4 mi. W Watsonville, Santa Cruz Co., Calif
6 ads collected under willow logs in willow grove
at edge of "Elliott Pond". Cl. temps as follows:
9.6, 12.0, 10.8, 10.8, 10.2, 12.5. Temps under
logs: 11.0, 11.0, 10.8, 10.8, 10.2, 12.5.
On the 1st the soil temp 1/4" deep registered 9.6°C
same as cloacal temp.

1 adult was taken from 3" in a mole run
way. The burrow opened under center of log
for 8". Salamander was coiled on bottom of
burrow when it was slightly widened -
almost twice normal width of burrow. Exposed
the salamander by tearing top off the burrow.
SS # 4 from burrow.

March 1. Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif

A series of small larvae collected in shallow areas at south-
west end of pond. Found very close to areas of egg deposition -
among & between clumps of dead Eleocharis stalks where
most of the eggs were found. Working with dip net the
larvae were taken in groups - probably indicates that they
remain close to hatching sites for awhile. Many still retained
balancers. Data recorded as follows.

no. larvae	Depth	temp. capture	temp surface
7	11"	10.0	13.0
2	10"	10.2	12.4
3	9"	11.2	13.0
3	10"	11.4	12.4

Bright, sunny & warm. Air temp ca 72°F.

J.V. Anderson
1959

7

Ambystoma m. croceum

Mar. 1 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
Toads taken under old RR ties, willow logs, wood piles etc.

Temp data recorded:

cl. temp.	temp under
-----------	------------

14.6	14.6
------	------

21.0	21.0
------	------

13.8	14.0
------	------

13.8	13.6
------	------

14.4	15.0
------	------

14.8	14.8
------	------

1st adult was under dead willow branch 6" diameter & 4 ft long lying partially imbedded in moist soil. The salamander was lying at the edge of a burrow - tail & hind quarters in burrow. Anterior 1/3 of body facing out & exposed. As soon as log was lifted it turned rapidly & escaped into burrow. I dug immediately but did not catch the croceum until I had torn out 6" of the burrow. Burrow 1 1/2" in diameter. From entrance it went down 3/4" & then ran parallel to surface along length of the log. Soil compacted & very moist (SS #1 - 9s). Almost surely the salamander burrow (built by ??).

2nd ad. Taken from a deep fissure in underside of an old RR tie. Turned tie & checked up in fissure which extended 3" into wood, was 8" long, 3/4" wide. Actually widened towards interior to ca 1 1/2". Soil sep in x-ray. The croceum was coiled & well protected. Cl. temp was 21°C. The tie is exposed to sun so it may be too "hot" a spot for a summer retreat.

Ambystoma m. croceum

March 1

1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif.

Remains; remains under large logs. 1 however was under a pile of old fence pickets with an adult Aneides lugubris - first time I've seen the two together. 1 juv. Aneides seen nearby.

Soil samples taken at capture -

March 30.

Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif.

Series of larvae taken at the NW end of the pond using long handled dip nets. As usual best success resulted from working in water 8-12" deep near clumps of vegetation with some open water surrounding the clumps. Had best results I've ever had working near clumps of Potamogeton. This may be because the Elodea is late in getting started. Thermal data: temps recorded for 14 minids ranged between 13.0 + 13.5°C. Time 10:30 - 11:30 am. Light rain falling. Sky dark with heavy clouds. Ostracods in tremendous numbers; Notonectids + Corixids common but not yet at peak; no ; Conchostracous present but not numerous. Hyla + Rana tadpoles very abundant. Seem to be more Ambystoma larvae than in previous years.

March 30

1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif.

Worked fringes of Ellicott Pond for almost two hours with R. Graham. Dip netted all around the pond & took only 1 larva (A. m. croceum). Don't quite understand why since conditions seem ideal.

Anderson
1959

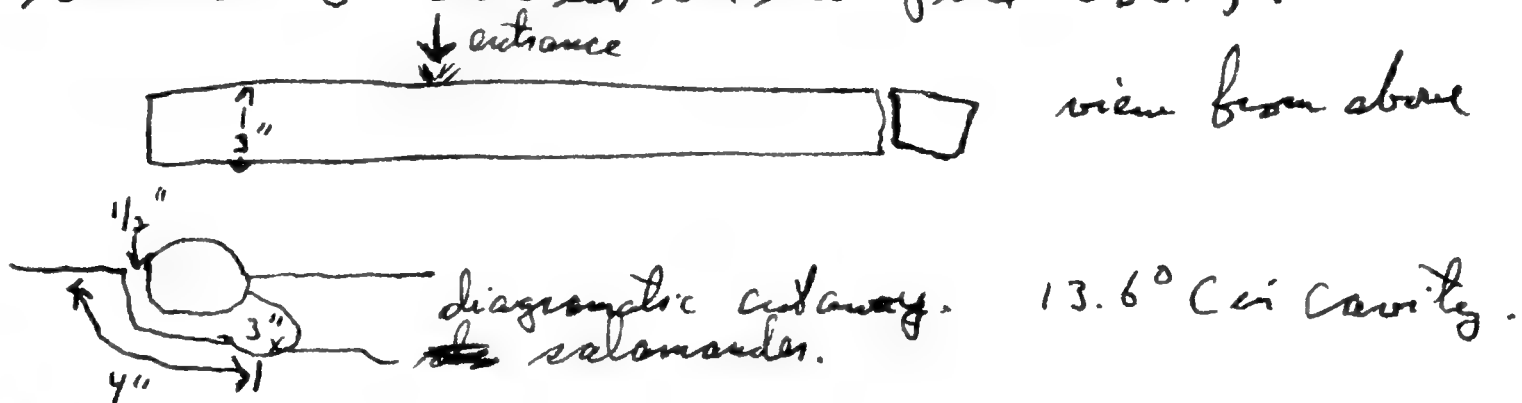
9

Ambystoma m. croceum

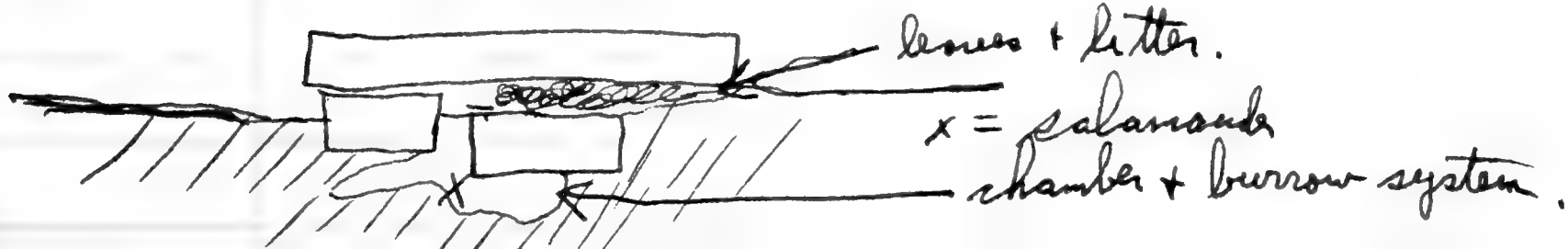
March 30 1/2 mi. NW Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif

Collected 9 adults under logs, boards, RR ties & fallen willow branches in willow grove at edge of Ellicott Pond. Thermal data: cl. temps - 16.0, 12.7, 13.8, 13.0, 13.0, 12.0, 14.4, 13.0 °C; temps under logs (in order) - 16.0, 13.0, 15.0, 13.6, 13.4, 12.2, 14.6 and 13.0 °C. Soil samples taken on each animal.

Two interesting retreats found. 1 under an old willow branch about 3" in diameter, 2 1/2 ft long & imbedded about 1" in the soil. About midway down the branch there was an opening 1 1/2" in diameter which led into a cavity 1" in width & 4" long running under the ~~log~~ branch. The salamander was coiled in a small chamber 3" wide at the end of the cavity.



The other was under a series of 3 flat boards partially imbedded in soil. First - about 20" long, 8" wide & 1" thick rested on surface & covered other two. The other two lay side by side separated by 1". One was 3" thick, 12" long & 4" wide - other about same. One was completely covered by soil; other 1/2" exposed



Amblystoma m. croceum

April 12 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Collected 30 larvae at NW end of pond area, using dip net. All in shallow (6-10") water & near clumps of Eleocharis & Polygonum. By working up to a clump of Polygonum through open water and then sweeping net into the clump it is possible to catch 3 or 4 larvae per sweep. They do use clumps for hiding places & forage out from there for feeding. Temp recorded 6 larvae at 16.0° - 15.5°C. 5 at 15°C. No temp data recorded for remainder at time of capture but all temps ranged ~~for~~ taken in the area ranged from 14.5° - 16.0°C.

April 12 1/2 mi. NW Ellicott RR Stn., 4 mi. W Watsonville, Santa Cruz Co., Calif
2 larvae taken in 8" of water in Ellicott Pond. Temp recorded: 21.0°C, 22.5°C. Worked pond for 1 1/2 hrs - 2 persons - but got only the 2 larvae & no Tigrinum larvae. Hyla tadpoles very abundant. Rana aurora tadpoles common.

2 adults taken from under willow logs in the willow thicket adjacent to the pond. 1 ♀ cl. temp 14.6°C. Both animals very sleek & well fed. Canopy cover on 75% & 85% for the two. Soil sample taken for pH. The other rested on decaying leaves & rotted wood.

May 17 Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Series of 26 larvae taken in central area of pond. Rest of pond dried up. Water remains only in front of large central willow area.

G.D. Anderson
1959

(11)

Ambystoma m. croceum

May 17

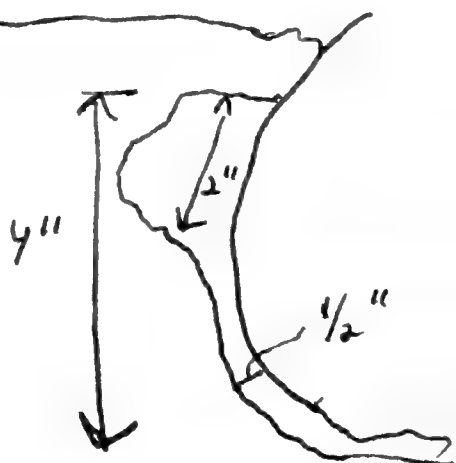
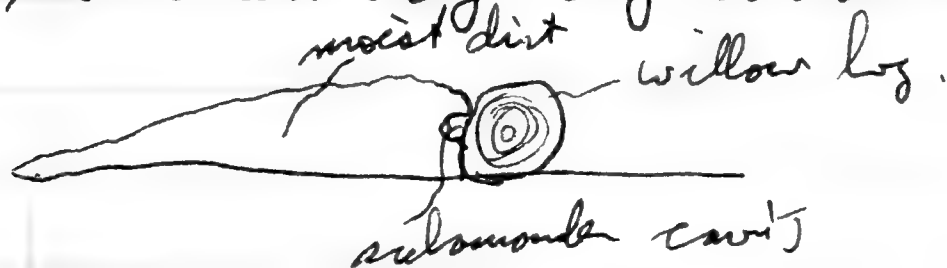
Valencia Lagoon, Rio del Mar, Santa Cruz Co., Calif
Larvae all taken in or near large clumps of Potamogeton. Bottom muddy - no Eleocharis growing here. Temp recorded - 8 larvae at 17.4°C. 2 larvae at 18.0°C, 10 larvae at 17.0°C. Conchostracans, Notonectids, Corixids, ostracods quite abundant. 1 larvae in process of losing gills. Rest all good larvae. Pana purpurea + Hyla regilla both transforming. Small, newly transformed H. regilla thick at edges of pond amongst Eleocharis.

Day cloudy + overcast.

May 17

1/2 mi. NW Ellicott R.R. Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif

3 adults collected under logs in willow thicket. 1 found in a cavity - obviously fashioned for itself under a log 3 ft long x 6" diameter. cavity 4" from ground level, at side of log in a clump of dirt. Thus 3 sides formed by dirt, one by log. Under a spreading willow, about 80% canopy cover + probably some all day long. Salamander coiled up.



J.D. Anderson
1958

Ensatina eschscholtzi

Dec 27 Valencia Lagoon, Piedel Mar, Santa Cruz Co., Calif

30 specimens seen on sandy road skirting the edge of the pond area & running thru the oak woods. 10 of these collected. Walked the roads between 6:15 pm & 8:05 pm with a Coleman lantern. Cl. temp of 2 collected specimens 7.8°C & 9.6°C . Air temp $\frac{1}{2}$ " above road 8.0°C . Almost all of the ensatines were very thin. Skins ~~were~~ were moist & appeared in good shape so apparently the rains of Dec 26 have helped them in this respect. 1 specimen was taken in can trap #2 at 3 pm, probably dropped in during the rains last night.

Jan.

Ambystoma m. croceum

Dec. 8

1/2 mi. NW. Ellicott RR Sta., 4 mi. W. Watsonville, Santa Cruz Co., Calif
11 collected under R.R. ties + willow logs in willow thicket S of pond area. Despite long dry spell there is ~~water~~ a little water in the pond and soil is moist under larger, partly sunken logs. 2 ♂♂ had slightly swollen vent regions + elongated tails - not prime breeding condition however. Cl. temps of 12.2 + 12.6°C recorded. Soil temp 12.6 in both instances. One badly damaged animal collected. Had all but 1/2" of tail missing + left side near hind leg torn open with intestines torn + protruding. Damage had taken place several hours earlier. Animal alive but barely able to move. No indication of cause. Isopods, crickets + slugs abundant under logs. Frogs, as usual, most abundant animal. Collected between 1:30 and 2:45 pm. 1 sub. adult Aneides lugubris taken also. Two Hyla regilla seen, both juveniles.



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